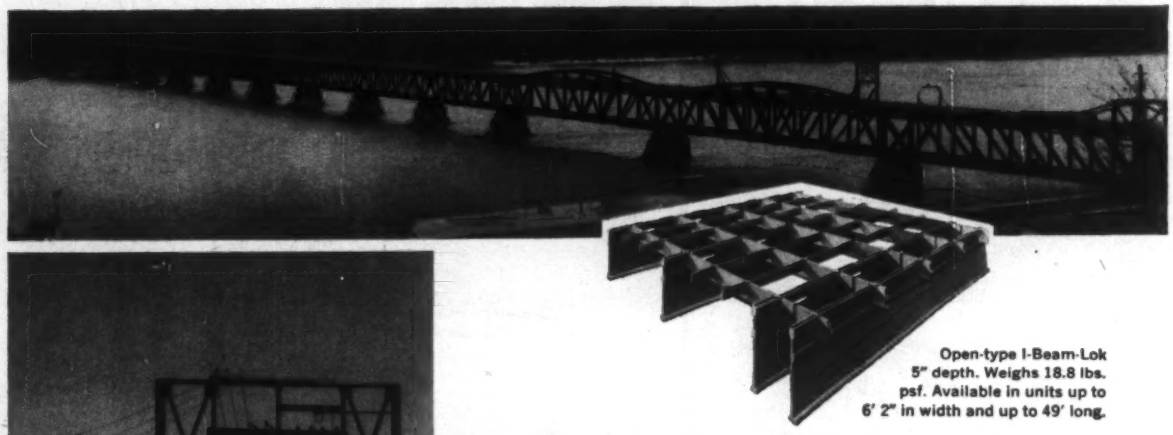
ENGINEERING NEWS-RECORD

Record dome: It's made of 321 prefab pan[illegible]

A McGRAW-HILL PUBLICATION

Reflooring with AmBridge I-BEAM-LOK gives old bridge new lease on life . . . lifts ban on big trucks



Open-type I-Beam-Lok 5" depth. Weighs 18.8 lbs. psf. Available in units up to 6' 2" in width and up to 49' long.

When the Keokuk Bridge Commission of Keokuk, Iowa, authorized the reflooring of the *repeatedly resurfaced* old timber floor on the bridge across the Mississippi River, their action resulted in far-reaching benefits. For not only did the new open I-Beam-Lok flooring provide a permanent all-weather floor that will *save a considerable amount in upkeep and snow removal,* but also, because it was lighter and stronger than the old floor, it was possible to lift the 10-ton weight limit which had long kept big trucks off this bridge.

Reflooring the 3,152-ft.-long x 18-ft.-wide bridge required approximately 59,000 sq. ft. of 5" TR-type open I-Beam-Lok.

While there is no way to determine accurately the weight of the old floor, built up with layer upon layer of various materials over the years, it seems certain that the weight saved in reflooring was at least three or four times the weight of the I-Beam-Lok itself—18.8 lbs. psf, or 567 tons in all. I-Beam-Lok, being steel, also greatly increased strength, literally giving the old bridge a new lease on life.

For information about the time- and money-saving advantages of this modern lightweight bridge flooring, ask for a copy of our 32-page catalog.

Keokuk Municipal Bridge
Keokuk Bridge Commission, Keokuk, Iowa

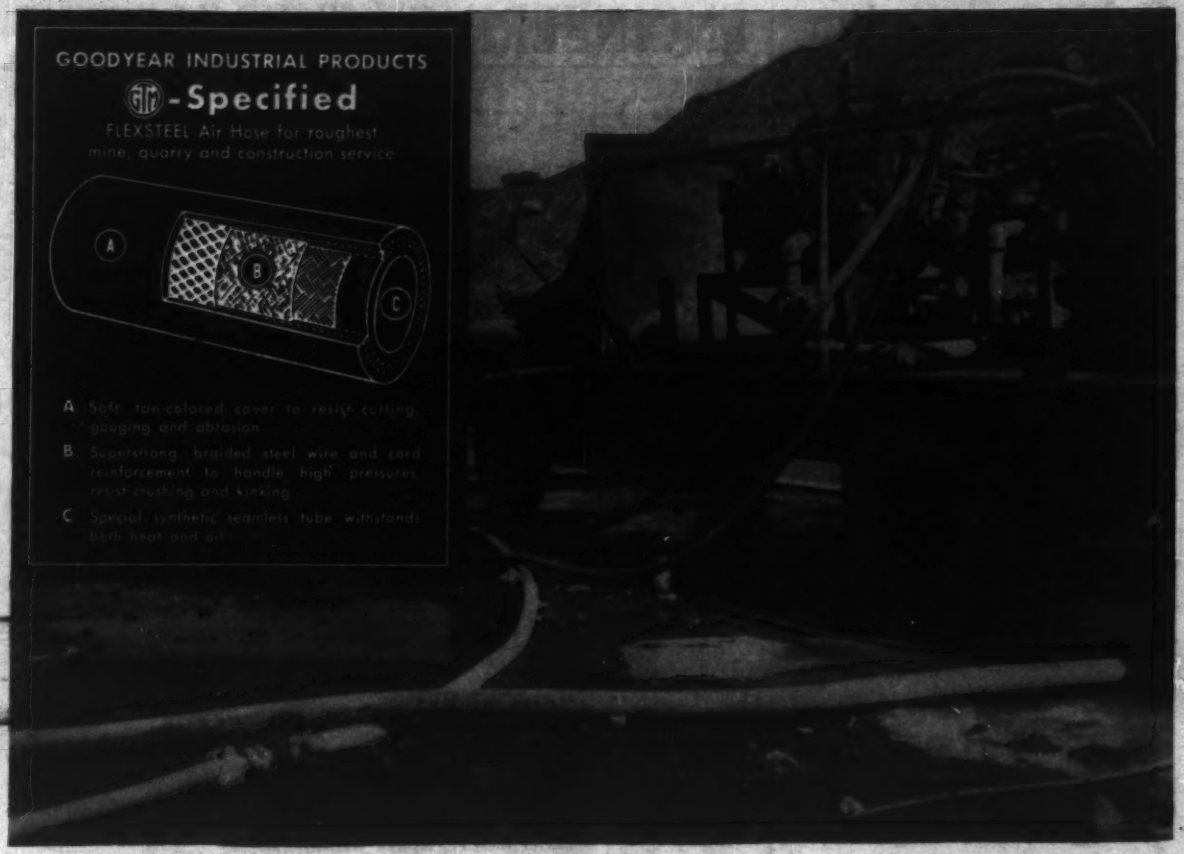
Designed by Modjeski and Masters, Harrisburg, Pa.

Contractors: The Whiting-Turner Contracting Company
Baltimore, Maryland

USS, AmBridge and I-Beam-Lok are registered trademarks

American Bridge Division of USS United States Steel

General Offices: 525 William Penn Place, Pittsburgh, Pa. Contracting Offices in: Ambridge • Atlanta • Baltimore • Birmingham • Boston • Chicago • Cincinnati • Cleveland • Dallas • Denver Detroit • Elmira • Gary • Houston • Los Angeles • Memphis • Minneapolis • New York • Orange, Texas • Philadelphia • Pittsburgh • Portland, Ore. • Roanoke • St. Louis • San Francisco • Trenton
United States Steel Export Company, New York


GOODYEAR INDUSTRIAL PRODUCTS
G-Specified
FLEXSTEEL Air Hose for roughest mine, quarry and construction service
A
B
C
A Soft, tan-colored cover to resist cutting, gouging and abrasion
B Superstrong braided steel wire and cord reinforcement to handle high pressures, resist crushing and kinking
C Special synthetic seamless tube withstands both heat and oil

How to keep costs low on a high-pressure job

You might well start with your hose. For miles of it are required to handle king-size grouting jobs like those on the St. Lawrence Seaway project.

And it takes a super-tough hose to stand up under the high pressures you use to force grout into cracks and fissures. Add the constant pulling and hauling about it gets—the rough and rocky ground it's pulled over – and it's easy to see how hose can become a real profit-eater.

But with FLEXSTEEL Hose you keep costs at rock-bottom. Its rugged inner tube and braided steel wire "muscles" are more than equal to the high-pressure work. And a super-tough cover shrugs off the roughest handling under the roughest conditions.

Yet, tough as it is, FLEXSTEEL Hose is light enough for moving speedily from job to job. It's amazingly flexible, too—so it's easily maneuvered, even in the closest quarters. No mystery, then, why the G.T.M. —Goodyear Technical Man—recommends FLEXSTEEL for big, fast-moving jobs the country over.

How about lower costs on your next high-pressure job? Just contact the G.T.M. through your Goodyear Distributor—or by writing:

Goodyear, Industrial Products Division,
Akron 16, Ohio

FLEXSTEEL HOSE by

GOODYEAR

THE GREATEST NAME IN RUBBER

Flexsteel–T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

Bridge Forming

Symons Forms Cut 100 Days Off Bridge Forming Job

Ease of Erecting and Stripping Reduces Pouring Time

Contractor Lee Hoffman, Beaverton, Oregon, was given 320 days to pour 4,000 cubic yards of concrete for a bridge over Myrtle Creek in Oregon. Job was complete in 220 days or only ¾ the time allotted.

Harry Pajutte, Chief Engineer for Hoffman, credits the ease of erecting and stripping Symons Standard High Strength Forms with contributing substantially to cutting pouring time, reducing number of men required on job, and providing greater mobility for the pouring equipment. Only

JUST 3 PIECES

3,144 square feet of panels were required for the 160,000 square feet of forming.

Symons Forms, Shores and Column Clamps can be rented with purchase option. Facts on Symons products and engineering service available upon request.

Symons

SYMONS CLAMP & MFG. CO.

4265 Diversey Avenue, Dept. G-8

Chicago 39, Illinois

ENGINEERING NEWS-RECORD

EIGHTY-FOURTH YEAR OF PUBLICATION

MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York - LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600; Washington - REpublic 7-8430

Editor, Waldo G. Bowman

Senior Staff Editor, Arthur J. Fox, Jr.
Managing Editor, Edward H. DeHart
Senior Editor, Frederick S. Merritt

Highways, Airports—Transportation
Edward M. Young, Jr.
Marc Leggiere

Buildings, Bridges—Structures
Frederick S. Merritt
Marianne Stern, David B. Hill

Rivers, Sanitation—Water Resources
James B. Sullivan
Joseph N. Todaro, John P. Mahoney

Finance, Labor—Management
Robert J. Stinson, Charles J. Harding

Regional Editors
J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Laurens L. Wise, *San Francisco, 68 Post St.*

Copy—Production
Barbara Lamb
Irwin Landau
Evelyn Stepio
Shirley Russell
John C. Greenough

Presentation
Harry W. Jensen, Philip J. Hora, Jr.

Statistics, Prices, Costs—Business News
Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Marian Scierra
Diane Tartaglia, Marie Moravcik,
James Webber, Ruth Carlson, Economics
Marie Boessler, Evelyn Huber, *Statistics*
David Farquhar, Bertha Herrmann, *Prices, Unit Prices*

Editorial Research and Indexing
Helen Rich
Eva Glerat, Rene Hay, Patricia Witschger

Consulting Editors: Van Tuyl Boughton, *New York*
Nathan A. Bowers, *San Francisco*

Advertising Sales Manager: Donald S. Robertson

Circulation Manager: Edward F. Bresseler

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Alan E. Adams, Glen R. Bayless, Roy Calvin, Ernest Conine, John C. L. Donaldson, Jay Flocken, Boyd France, Anthony DeLeonardis, Arthur J. Kraft, Donald O. Loomis, Gladys Montgomery, Arthur L. Moore, Seth T. Payne, Dean Reed, Morton A. Reichek, Caroline W. Robertson, Vincent B. Smith.

Domestic News Bureaus: Atlanta—801 Rhodes-Haverty Bldg., Charles T. Dixon, Jr., Chief, Frances Ridgway; **Chicago**—520 North Michigan Ave., Stewart W. Ramsey, Chief, Elizabeth Wilson; **Cleveland**—55 Public Square, William G. Meldrum, Chief, Violet Bashian; **Dallas**—901 Vaughn Bldg., Kemp Anderson, Jr., Chief, Lorraine Smith; **Detroit**—856 Penobscot Bldg., Donald MacDonald, Chief, Barbara Bigge; **Los Angeles**—1125 West 6th St., John Kearney, Chief, Michael Murphy, Jack Meyer, Marvin Petal; **San Francisco**—68 Post St., Margaret Ralston, Chief, Jenness Keene, Sue Johnson; **Seattle**—6040 Fifth Ave., N.E., Ray Bloomberg.

Foreign News Bureaus: New York—John Wilhelm, Editor; **London**—Robert Gibson; **Paris**—Robert E. Farrell; **Mexico City**—Peter Weaver; **Bonn**—Morrie Helitzer; **Beirut**—O. M. Marashian; **Tokyo**—Sol Sanders; **Caracas**—John Pearson; **Moscow**—William J. Coughlin. Correspondent in 55 cities throughout the world.

Correspondents: In 79 principal cities in the U. S. and possessions and Canada.

McGraw-Hill Economics Department: Dexter M. Keezer, Director; W. H. Chartener.

Robert F. Boger, Publisher

ENGINEERING NEWS-RECORD, Vol. 161, No. 20, NOVEMBER 13, 1958

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Publication Office, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. Executive, Editorial, Advertising and Circulation Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, President, Publications Division; Shelton Fisher, Senior Vice President; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders. United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20 per year, payable in advance. Second-Class mail privileges authorized at Albany, New York. Printed in U. S. A. Title registered in U.S. Patent Office.

© Copyright 1958 McGraw-Hill Publishing Company, Inc. All Rights Reserved.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, and including postal zone number, if any. If possible enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

YOUR PROBLEM TOMORROW

—may be
A SEA OF ROCK!

YOU'LL NEED A REAL ROCK SHOVEL

NORTHWEST Always Ready to GO

JACKSON

Pacific Jubilee

INTERNAL AND SURFACE TYPES

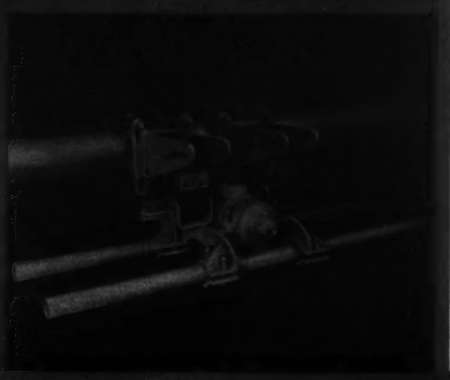
for Thorough Vibration of All Slabs 6" to 32" thick, 25' wide

Supplied with exceedingly powerful motors, there is no job of concrete HIGHWAY OR AIRPORT paving too tough for a JACKSON VIBRATORY PAVING TUBE. They are exceedingly flexible. Both internal and surface types may be had in just the right number of units to fit the job. And since the internal and surface vibratory units are interchongeable with optional equipment, the contractor who owns a JACKSON PAVING TUBE can quickly change from one to the other. Their use assures:

1. Maximum compressive strength and impermeability of the hardened concrete through use of dryer, more economical mixes.
2. Faster progress in normal highway paving.
3. Complete and uniform compaction throughout the mass, with no mortar streaks — even on 25' airport slabs. (It is equally efficient where air-entraining cement is used).
4. Adequate puddling at sideforms on the average paving job.
5. Excellent finish without excessive mortar.

See them at your Jackson Distributor
Name and literature on request

INTERNAL TYPE as shown in operation above: Tubes vibrate deep in concrete. One unit, as shown, for each 5' (maximum) of slab width. Easily attached to finisher or spreader. GREAT FOR THICK, HEAVY AIRPORT RUNWAYS.



Shown above is the surface type tube in action (tube raised and lowered) IDEAL FOR HIGHWAY SLABS OF ALL WIDTHS AND THICKNESSES.

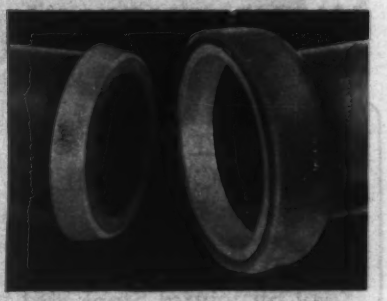
INTERCHANGEABILITY: Internal and surface vibratory units can be interchanged very quickly on a JACKSON PAVING TUBE.

SURFACE TYPE: Vibrates on the surface, accomplishing thorough densification of all concrete slabs of highway thickness. One unit, as shown at left, for each 6' (maximum) of slab width. Attaches to front of finisher.

JACKSON VIBRATORS, INC. LUDINGTON, MICHIGAN

over 100,000 miles of AMVIT Jointed Clay Pipe Installed in FOUR YEARS

Only Factory-Made Mechanical Joint With an Outstanding Service Record In Hundreds of Vital Sewer Systems



Never before in the history of the sanitary sewer construction industry has a product gained such immediate and wide acceptance and usage in such a short period of time.

In the past few years, over 100,000 miles of Amvit® have been installed across the country with outstanding results.

Experience has shown Amvit is the engineer's choice. Here's why:—

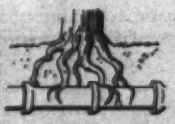
1 QUICK INSTALLATION SAVES LABOR

Amvit Jointed Clay Pipe is delivered to the job site ready for use. Just push the pipe together and the joint is made — sure and tight. No more fussing with caulking, hot pots, joint compound.

2 FACTORY-MADE QUALITY

The Amvit Joint is manufactured from plasticized resins of polyvinyl chloride. No other combination of materials is used or needed. It is applied on the pipe at the factory and delivered ready for immediate installation.

3 ROOTPROOF



The design of the Amvit Joint is based on the ball and socket principle. The material on the spigot end is convex shape, with the bell in a concave shape. This permits easy and rapid installation. When the joint is made, it reaches maximum compression which results in a really tight line. Nothing can enter the line.

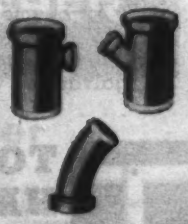
4 PREVENTS INFILTRATION

Due to the tightness of the joint, ground water cannot enter the line. Since infiltration is eliminated, the sanitary sewer does not have to carry anything other than that for which it was designed. This permits the use of smaller sized pipe in many instances and will reduce material cost.

5 BETTER FLOW, LESS MAINTENANCE

The design of the Amvit Joint assures self-centering which gives a smoother invert and better flow characteristics. Because the joint is really tight, no foreign matter such as dirt, sand, and stones can possibly enter the line.

6 COMPLETE FITTINGS



Amvit is furnished on all standard fittings, as well as pipe from 4" thru 24" diameters. It is now available for immediate delivery in Northeast and Central States.

For a new descriptive folder on how Amvit can help you cut sewer project costs, write American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

*T. M. Registered

SINCE 1940

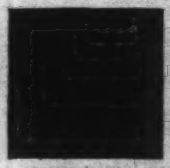
AMERICAN

American Vitrified Products Company

Plants Across the Nation... Brazil, Indiana • Chicago, Illinois • Cleveland, Ohio • Crawfordsville, Indiana • Detroit, Michigan • East Liverpool, Ohio • Fenton, Michigan • Grand Ledge, Michigan • Lisbon, Ohio • Los Angeles, California • Milwaukee, Wisconsin • South Bend, Indiana • St. Louis, Missouri • White Hall, Illinois

"ON THE JOB WHEN YOU WANT THEM!"

SYLGAB
STEEL and WIRE ACCESSORIES for Fast
FIREPROOFING
of Structural Steel



RIGID BEAM CLIP
5' lengths
— installed with lightning speed.
Made of #12 or #10 gauge galvanized.

★

HAUNCH STIFFENER
for beams over 16" deep. Made of #10 or #12 gauge galvanized wire.

★

TOGGLE HANGERS
More rigid than any wire. Used in conjunction with
SYLGAB SNAP-ON HAIRPIN CLIP
to tie main and cross furring together.

★

Sylgab Steel & Wire Accessories conform to the specifications of the Concrete Reinforcing Steel Institute.

Quality — Service
Ease of Installation

SYLGAB
STEEL & WIRE CORP.
79-05 Cooper Ave., B'klyn 27, N. Y.
BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES
Request Catalog—Phone or Wire Collect

Reader Comment

Figuring River Odds with Statistics . . .

1. Gambling Isn't Good Enough

SIR—The artcle "How to Figure Odds on a River Project" (ENR Aug. 28, p. 35) presents a legitimate use of statistics, but there is considerable question as to whether it is the proper basis for determining the economic feasibility of major water resources developments. River projects which represent large capital investments and upon which the welfare, health, and lives of people depend cannot be considered as cold-blooded gambles. Every effort must be made to assure that there will not be financial or functional failure.

Over the years an impression has been created that hydrologists and hydraulic engineers are a cross between a crystal ball gazer and an erudite gambler when determining project capacities and related economic returns. This has resulted in part from the fetish for using probabilities when positive limits could be estimated by other analytical procedures. The bridge designer does not figure the probability of his design loading occurring in a critical position on the structure. Why should the hydraulic engineer become a gambler if a small factor of safety against failure does not create an economic burden?

The computation of power output from a duration curve based on a 40-year record was only used for illustrative purposes, but it should be pointed out that use of any duration curve tends to invalidate the computation of the probability of the power output because the duration curve fails to show critical sequences of flow in the record. The application of confidence limits to the average curve still will not reveal the true effect of such sequences. The mass curve of runoff, adjusted for cyclical effects, is the accepted method for determining dependable power output.

Studies for a number of hydroelectric projects in a variety of climates throughout the world indicate that the average flow to be utilized, even with large quantities of seasonal storage, does not exceed 50-65% of the long-term average flow of rivers. Use of larger percentages of the average flow will result in deficiencies in some years and possible failure to earn a return on the investment.

GORDON R. WILLIAMS
Professor of Hydraulic Engineering
Massachusetts Institute of Technology
Cambridge, Mass.

2. There's No Alternative

SIR—Mr. Williams questions the whole policy of statistical inference in hydraulic engineering, as outlined in our article, without offering a satisfactory objective substitute.

Statistical analysis of hydrologic events provides an objective way of measuring the variability in river discharges. Decrying the gambler's role does not change the essential facts—a project that depends on variable discharge is a gamble. We take chances in nearly all enterprises linked to the weather, just as we mentally balance the chances of rain against the consequences of error before we decide to carry an umbrella.

The stakes involved in river development are indeed greater than those in an umbrella decision, but this underscores the need for quantitative analysis of the potential gains and losses. The alternative in the one case is to stay indoors, in the other to develop less of the resource so as to be sure. But society has already made its choice. There is profit and impelling need to develop more and more of the available resource, and with this development there are the inescapable risks. There is equal need for tools of analysis to evaluate this risk.

Mr. Williams uses structural design as an objective lesson for hydraulic engineers. There is a vast difference between structural design and resource development. Even if we would decide only to develop a "sure thing" the remainder is still there, and the marginal entrepreneur will develop it, and more than likely with profit.

It would be a retrograde step to adopt such factors of safety, as normally applied by the structural engineer, in hydraulic analysis unless these have a basis in probability. A reading of A. M. Freudenthal's paper in the Transactions of the American Society of Civil Engineers of 1947, clearly indicates the nature of the gamble inherent in the arbitrary selection of factors of safety. Freudenthal decries the gap between the highly refined stress analysis and the determination of the safety factor.

(*Reader Comment continued page 11*)

Towed on its own pneumatic tires.
Completely new Model 873 Finisher has proved its superior performance in paving city streets, alleys, parking lots, driveways, playgrounds, highway shoulders, highways and many other jobs.
Barber-Greene
NEW BARBER-GREENE MODEL 873 FINISHER
New folding hopper in raised position.

paves on crawlers . . . travels on rubber

With crawler traction and flotation for the variety of bases encountered in paving all types of jobs—including parking lots, driveways, playgrounds, etc.—and trailed at truck speed on its own hydraulically retractable pneumatic tires, this new finisher includes advancements never before available.

Unmatched tamping, leveling and thickness control principles of the larger Barber-Greene Model 879-B Finisher.

Paves on crawlers. Paving all kinds of jobs, the 873 has crawler traction and flotation for all base conditions—especially less stable bases.

Travels on rubber. Hydraulically lifts itself on pneumatic tires for trailing with its own towing hitch.

New hydraulically folding hopper. Maximum capacity and truck clearance in open position. Sides hydraulically raise to feed automatically. No dead areas. Reduces transport width to 8'.

New simplified controls. Single steering lever. New hydraulic controls for material flow, screed hoist, towing wheels, and folding hopper.

Paving widths from 6' to 12' in 3" increments.

Paving speeds to 50 fpm. Towing speeds to 30 mph. Converts from paving to towing in seconds.

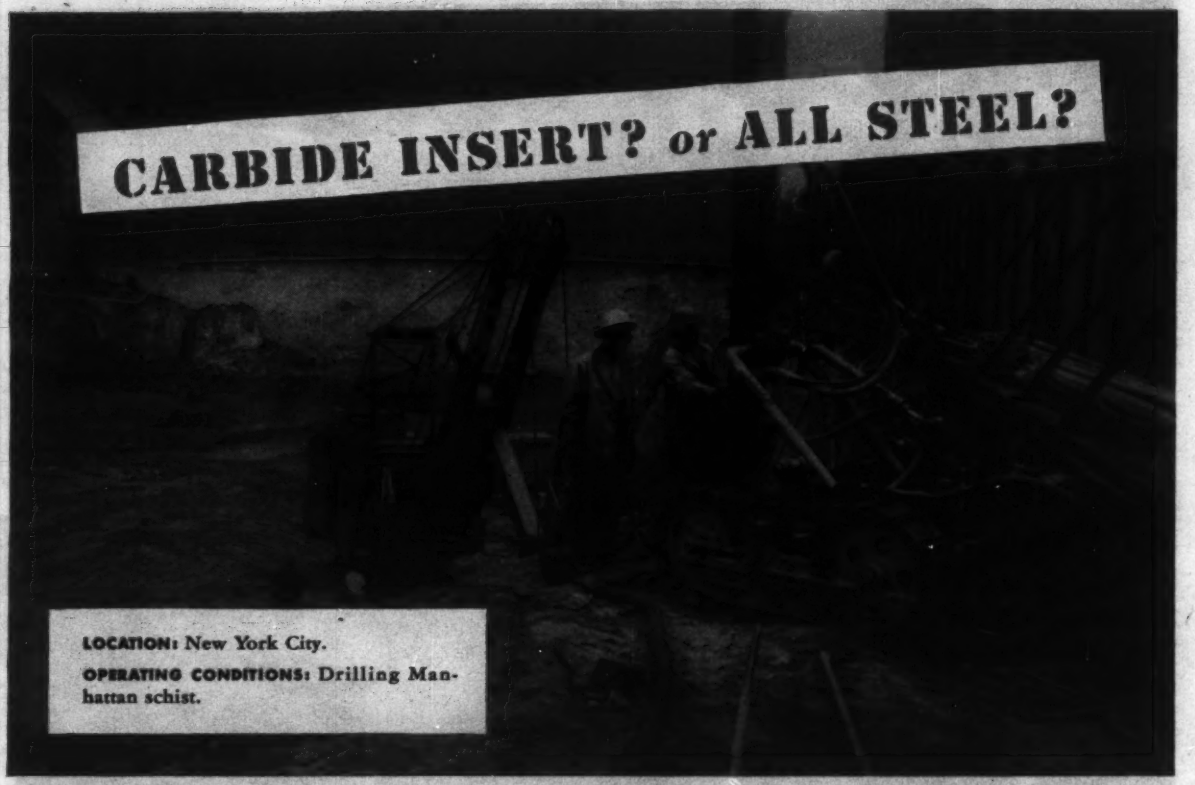
58-47-7

Write for information on this significant advancement in asphalt equipment

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT



"We get faster drilling with fewer bit changes using TIMKEN® carbide insert bits"

. . . Reports Slattery Contracting Co., Inc.

EXCAVATING for the new TIME-LIFE Building in New York City, Slattery Contracting Company, Inc., had to drill extremely deep, constant gage holes through hard, abrasive Manhattan schist. They held bit changes to a minimum, stepped up drilling speed and got lowest cost per foot-of-hole with Timken® threaded carbide insert bits.

For jobs like this you'll find that Timken carbide insert bits give maximum speed and economy.

Yet carbide insert bits aren't always best for every drilling job. In softer, less abrasive ground Timken all steel multi-use bits are your best bet. With correct and controlled reconditioning, they hold your cost per foot-of-hole to a minimum in ordinary ground when full increments of steel can be drilled.

Your drillers save time with either Timken carbide insert bits or all steel multi-use. Both are interchangeable in the same thread series, and dozens of different bits fit the same drill steel. Bits can be changed easily and quickly—right on the job!

All Timken rock bits are made from our own fine alloy, electric furnace steel. And to protect their threads against drilling impacts, Timken bits have a specially developed shoulder union.

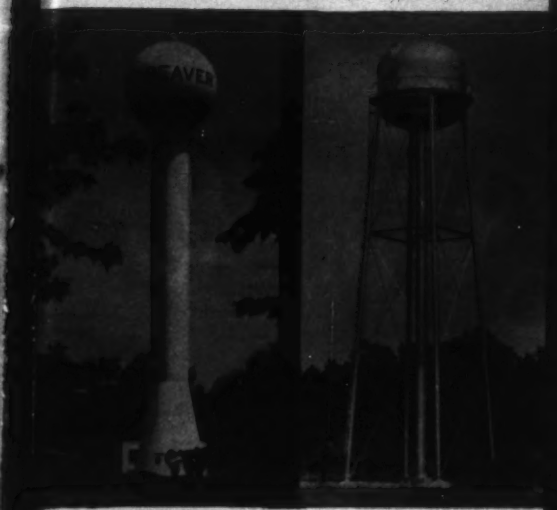
So why not get all these advantages on your next drilling job? To make sure you get the type of Timken bit that meets your particular needs, just call or write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded all steel multi-use rock bit

Timken threaded carbide insert rock bit

TIMKEN *your best bet for the best bit for every job*

TRADE-MARK REG. U. S. PAT. OFF.



BEAVER, IOWA
25,000 gallons

HANOVER, VIRGINIA
60,000 gallons

FOREST, MISSISSIPPI. 500,000 gallons

PUEBLO, COLORADO. 1,500,000 gallons

PDM
ELEVATED STEEL TANKS

BETTER ELEVATED WATER STORAGE

comes in all sizes to serve every need

Pittsburgh-Des Moines' resources as pioneer builders of steel elevated tanks include every type of structure, in every capacity to meet your individual water storage needs—fabricated and erected with expert craftsmanship and a responsible guarantee of satisfaction.
Write for our latest "Modern Water Storage" brochure: 20 pages of interest and information!

Pittsburgh-Des Moines Steel Company

Plants at PITTSBURGH, BALTIMORE, DES MOINES, SANTA CLARA, FRESNO, and STOCKTON, CALIF.

Sales Offices at:

PITTSBURGH (25)....3414 Neville Island
BALTIMORE (26).....Curtis Bay Station
NEWARK (2).....1716 Military Park Bldg.
CHICAGO (3).618 First National Bank Bldg.
EL MONTE, CAL.....P. O. Box 2012
ATLANTA (5).361 E. Paces Ferry Rd., N.E.
DES MOINES (8).....915 Tuttle Street
DALLAS (1).....1219 Praetorian Bldg.
SEATTLE (1).....Suite 322, 500 Wall St.
SANTA CLARA, CAL.....621 Alviso Road
DENVER (2)...333 Railway Exchange Bldg.

Protection takes no recess when INSULROCK goes to school

school buildings by roof decking with Insulrock slabs. Insulrock resists the wear and tear of rain, snow, sleet, sun, ice, sudden temperature changes. Insulrock—*because it's the building slab uniquely bonded with Portland cement*—toughens up, gets strong enough to tackle any job, by exclusive "weather-curing": after being made, the Insulrock slabs are stacked and stored outside for months—in all seasons, all kinds of weather, before Insulrock is seasoned, right, and ready for you.

the added cost of efficient acoustical ceilings, with Insulrock—because the handsome, off-white, exposed *underside* of the Insulrock roof decking makes a good-looking room ceiling without further finishing. The tiny air pockets honeycombing Insulrock trap classroom noises. This acoustically excellent ceiling is thus, you see, actually free of additional cost—the roof decking includes the ceiling!

winter heat, summer cooling bills—Insulrock insulates. You reduce fire dangers, lower risk of losses—Insulrock, listed by UL, is incombustible.

Insulrock adds up to school savings. How much for you? Find out now.

FLINTKOTE

INSULROCK COMPANY

It is true, as he points out, that probability methods require a random distribution of loads, whereas the structural engineer's factor of safety may in some cases be required to cover accidental or unforeseen loading. Consequently his analysis is only an attempt and not the final answer to adapting statistical analysis to the safety problem in structural design.

We believe that probability methods are particularly applicable to hydrology because natural events such as streamflow are basically random and can best be described by using statistical parameters. Criticism of the use of such methods stems largely from the failure to appreciate the need for applying the techniques of statistical inference. The quantitive assessment of risk in the hydrologic field based on adequate records may be regarded as an extension of the now accepted techniques of quality control in the field of production.

In his last sentence Mr. Williams states that there is an optimum level of storage development beyond which there is a risk of failure to earn a return on the investment. It is precisely to assess such risks associated with hydrologic variables such as storage capacity that techniques are needed along the lines proposed by the article.

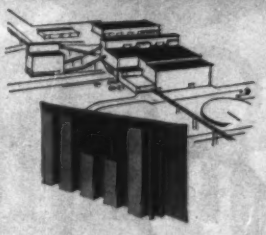
The use of the duration curve as an example in connection with hydropower design was criticized on the grounds that it does not reveal the critical sequences of flow indicated by the residual mass curve. However, as no storage is involved in this example, the duration curve can be used. In any case, the mass curve and duration curve as obtained from the available data are both subject to sampling errors, the magnitude of which confidence limits are designed to show.

Statistical analysis of the residual mass curve was initiated by Hurst (Trans. ASCE, 1950) and has been developed so that confidence limits can be drawn giving an estimate of the risks of obtaining critical periods more severe than observed. However, these statistical developments are not likely to appeal to hydraulic engineers who decry such methods, naively believing that positive limits can always be obtained by the use of a small factor of safety.

WALTER B. LANGBEIN and
G. N. ALEXANDER
Hydraulic Engineers
US Geological Survey

CALENDAR

The Society of the Plastics Industry, Inc., 8th national exposition and conference, International Amphitheatre, Chicago, Ill., Nov. 17-21.



Skiing weather is working weather with Milcor Wall Panels

Here, 1200 squares were erected fast in the cold of Northern Michigan's ski country

Temperatures drop mighty low in Iron Mountain, Michigan during December, January, and February. It gets too cold to make much headway with masonry construction. But weather didn't worry the Bechtel Corporation in the erection of M. A. Hanna Company's Taconite processing plant.

They closed in the building fast, by using Milcor exterior wall panels. These were quickly fastened to sub-girts with self-sealing, self-tapping screws.

Construction costs stayed down. And so will maintenance costs—Milcor exterior panels are Bonderized, fortified against corrosion.

Milcor Wall Panels are available also as field-assembled, non-load-bearing sandwich walls comprising interior steel liner panels, insulation, and fluted exterior panels.

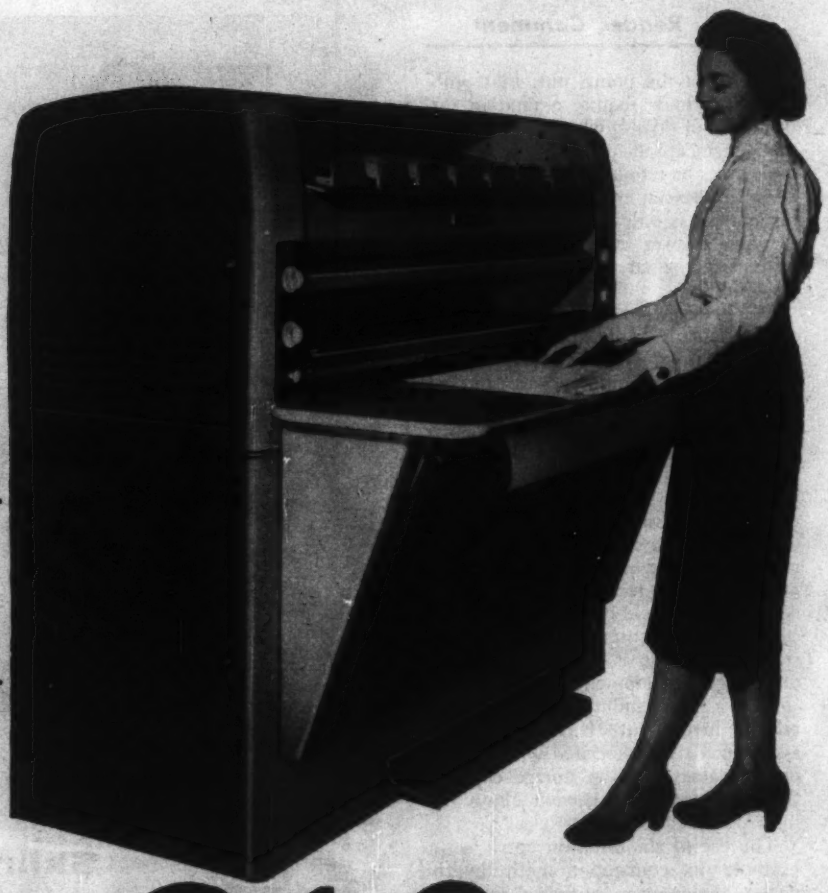
For convenient planning help, see Sweet's section 3b/In — or write for catalog 243 giving complete details.

MILCOR® Wall Panels

It pays . . . in many ways . . . to specify Milcor Steel Building Products

MILCOR CELLUFLOR	MILCOR ROOF DECK	MILCOR RIBFORM	MILCOR CONVECTOR ENCLOSURE WALL UNITS	MILCOR METAL TRIM
Sweet's, section 2a/In	Sweet's, section 2f/InL	Sweet's, section 2h/In	Sweet's, section 30h/In	Sweet's, section 12b/In

INLAND STEEL PRODUCTS COMPANY Member of the Ryerson Steel Family
DEPT. K, 4147 WEST BURNHAM STREET • MILWAUKEE 1, WISCONSIN • ATLANTA • BALTIMORE • BUFFALO
CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DENVER • DETROIT • KANSAS CITY • LOS ANGELES
MILWAUKEE • MINNEAPOLIS • NEW ORLEANS • NEW YORK • ST. LOUIS. WP-2



Better Prints . . .

Easier Printmaking . . .

Big, new operating features

The Printmaster 810

Here's the advanced Printmaster 810—with features that outdate every other whiteprinter in its price class. Now you can assure yourself of better whiteprints, more easily, in less time.

1. **More compact—lower in height** . . . saves valuable floor space, allows easier lamp replacement, better control . . . means less fatigue.
2. **New design of brush feed assembly** . . . to automatically control curled edges, folded corners.
3. **New print pick-off** . . . prevents tearing, sticking or scratching.
4. **Improved tracing release** . . . convenient release pedal means immediate control of tracing and print—no loss of time and material.
5. **Cool cylinder design** . . . means practically no sticking in processing plastic-coated materials and foils.
6. **New filtered air system** . . . Fiberglas® filter delivers filtered air—for cleaner machine, cleaner prints—means less shut-down time for cleaning.

And Ozalid offers other great *proven* features such as new steel frame support . . . double paper rods . . . both rear and front delivery . . . and U/L approved safety devices.

Why not test-run your own tracings through the new "810"? Simply call your local Ozalid representative or write: Ozalid, Dept. M-11-13, Johnson City, N. Y.

OZALID®

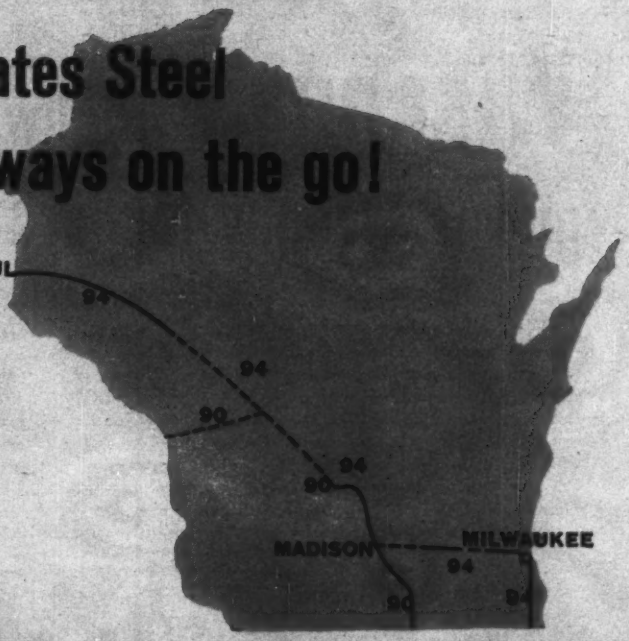
First Name in Whiteprinting

A Division of General Aniline & Film Corporation
In Canada: Hughes Owens Company, Ltd., Montreal

Wisconsin Highway Program moves steadily forward

Almost 80-million dollars were budgeted in 1958 for work on Wisconsin's Interstate Highway Program. Construction is under way in eight counties on 72 miles of the proposed 452-mile system. In Waukesha County 7.3 miles are completed and in service. It is expected that the fall of 1959 will see the opening of new roadways in Rock, Dunn, St. Croix, Racine and Kenosha Counties. And work is progressing on the Milwaukee County Expressway System, parts of which will be incorporated into the Interstate Highway Program. Contracts now let for highway construction in eight counties total more than $33,000,000. General routing of Wisconsin's Interstate roadway has been approved in four other counties, and routes are being studied to complete the project in an additional four counties. The Federal government has allotted better than $26,000,000 for the Wisconsin Interstate system in 1960 and $20,000,000 for construction of the state's primary and secondary roads and for urban highways. The road building program is under the direction of Harold L. Plummer, Chairman, State Highway Commission and E. L. Roettiger, State Highway Engineer.

Products of United States Steel keep Wisconsin's highways on the go!



The Wisconsin Interstate Program involves the construction of completely new roadways, Routes 90 and 94. The 452-mile system will cost upwards of $469,000,000. In southwest Wisconsin, Route 94 will parallel present Route 41 and for many miles will consist of four separate roadways, the outer two serving local traffic and the two inner roads being the expressway. The southern section of Route 90 will take traffic from Beloit to the junction of Route 94 at Madison. Farther north, Route 90 will go west from Tomah to connect with La Crosse. Over 200,000 tons of steel, most of it unseen by the traveler, will help make this a smoother, safer road system.

Steel lays the foundation. Before the paving machines started to pour concrete, four and a half million dollars worth of grading and hauling equipment went to work in Wisconsin's southeastern counties to meet the time and cost limits set for the job. USS High Strength Steels and USS *"T-1"* Constructional Alloy Steel have saved the owners of such equipment uncounted hours of costly delay by providing the strength and durability which keep abrasive wear to a minimum and eliminate maintenance stops. In hoists, derricks and paving machines, USS *American Tiger Brand* Wire Rope helps to assure full operating capacity under the toughest going.

USS *DI-LOK* Reinforcing Bars have a continuous diamond-locking deformation which assures positive anchorage to the concrete, reduces cracking to a minimum and makes shorter splices possible. On bridges, elevated expressways and overpasses, these bars add years of serviceable life to the roadway. Universal Atlas Cement Division of United States Steel provides *Atlas Duraplastic* air-entraining portland cement which makes a workable, plastic, extremely cohesive concrete that is fortified against freezing-thawing weather, prevents scaling caused by de-icing salts. *Universal* regular and air-entraining portland slag cement, *Atlas* regular and air-entraining high-early cement, and *Universal* and *Atlas* portland cements are also available to meet every paving need.

The construction of large drainage structures can be a quick, easy job when USS *AmBridge* Sectional Plate is used. These low-maintenance structures can be provided in Pipe, Pipe-Arch and Arch sections in a wide range of sizes and gages. For smaller drainage systems, corrugated metal drainage products made of USS Culvert Sheets are recommended for strength, low cost and speed of installation. To provide safety on bridges and curving ramps, USS guardrails or galvanized highway guard cable can be installed quickly and inexpensively.

We will be glad to send you a free copy of this 64-page catalog which is crammed with information about USS Steel Products that can help cut work and costs, and speed up all phases of highway construction. It lists all services as well as products available from United States Steel. Write to United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

Fifteen interchange and stream bridges have been erected in the seven-mile stretch of Route 94 now completed in Waukesha County. USS H-Beam Bearing Piles for pier and bridge foundations are available in a range of sizes to accommodate all desired design loads. Their compact shape permits easy driving to desired penetrations even in difficult soils. Bridges and overpasses can be made lighter, stronger and longer lasting with USS *Tri-Ten* and the other brands of USS High Strength Steel, USS *Cor-Ten* and USS *Man-Ten*. Thinner and lighter sections frequently lower the cost substantially.

USS and trademarks in italics are registered by U. S. Steel

United States Steel

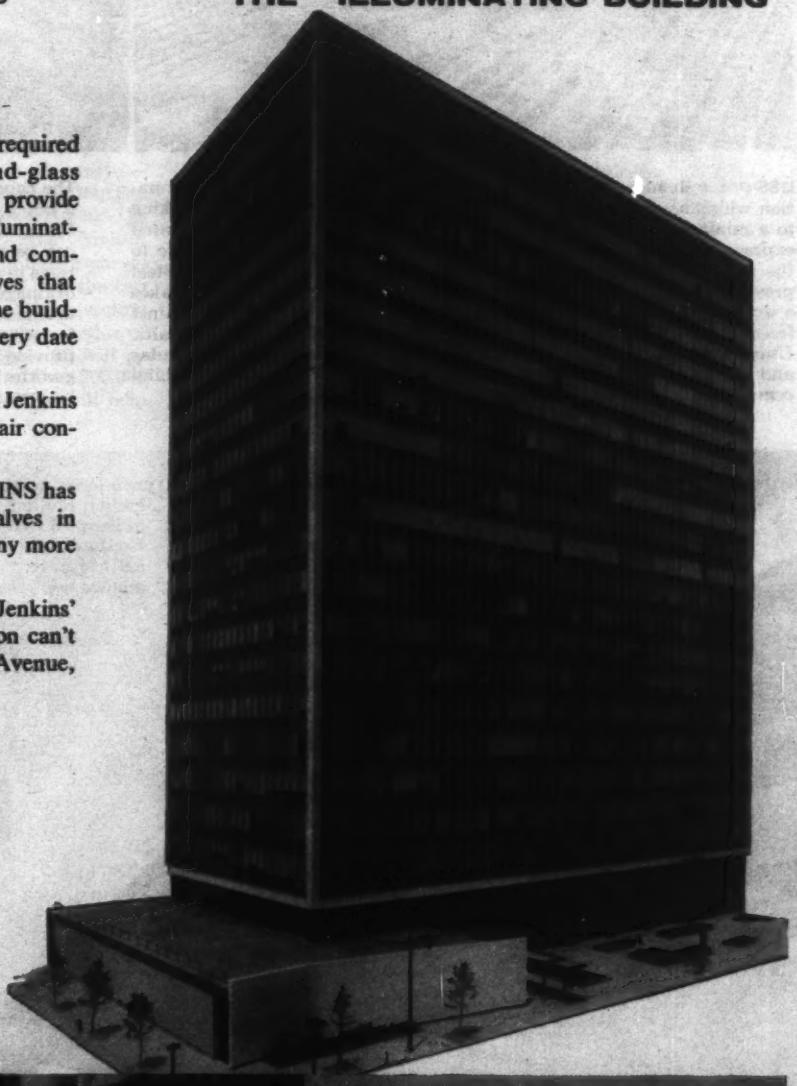
USS

Divisions of United States Steel serving the highway market: American Bridge Division, Pittsburgh, Pa. • American Steel & Wire Division and Cyclone Fence Department, Cleveland, Ohio • Columbia-Geneva Steel Division, San Francisco, Calif. • Consolidated Western Steel Division, Los Angeles, Calif. • National Tube Division, Pittsburgh, Pa. • Tennessee Coal & Iron Division, Fairfield, Alabama • Universal Atlas Cement Division, New York • United States Steel Supply Division, Steel Service Centers, Chicago, Illinois

New Beauty on Cleveland's Skyline

Got lifetime service valves and got them fast by choosing JENKINS

THE ILLUMINATING BUILDING



More than top quality in valves was required for this $17,000,000 aluminum-and-glass building, completed in April 1958 to provide offices for the Cleveland Electric Illuminating Company and other industrial and commercial tenants. In addition to valves that would last for the building's lifetime, the builders sought assurance that a close delivery date would be met.

Both were assured by the choice of Jenkins Valves for all plumbing, heating and air conditioning lines.

For almost a century the name JENKINS has meant enduring quality. Jenkins Valves in service for fifty years and good for many more are often reported.

And, when valves are needed quickly, Jenkins' efficient, national system of distribution can't be surpassed. Jenkins Bros., 100 Park Avenue, New York 17.

Architects:
Carson and Lundin, New York

Consulting Engineers:
Jaros, Baum & Bolles, New York;
McGeorge, Hargett and Associates, Cleveland

General Contractor:
George A. Fuller Company, New York

Heating-Air Conditioning Contractors:
Kerby Saunders Company, New York;
Feldman Brothers Company, Cleveland

Plumbing Contractors:
Kerby Saunders Company, New York;
Gorman Lavelle Plumbing-Heating Co., Cleveland

Managing Agents:
Ostendorf-Morris Company, Cleveland

Typical of more than 4,000 Jenkins Valves of bronze, iron and cast steel serving this building owned by the 55 Public Square Corp., Cleveland.

Sold Through Leading Distributors Everywhere

ENGINEERING NEWS-RECORD

Vol. 161, No. 20 November 13, 1958

Number of copies printed this issue 83,361

CONTENTS

NATIONAL AFFAIRS

Construction Bonds: The Voters Speak..... 21
"No" Vote Won't Stop Portland..... 22
Latin Contractors Plan Bidding Cleanup..... 22
Spanning Glen Canyon Dam With a Big Cable 23
Road Men Will Open Earth's Last Frontiers.... 24
Thor Missile Gets Movable Home..... 28
Dallas Center Nears Completion..... 29
Roof Hangs From Prestressed Concrete Arches. 29
Atom Plants Move Ahead..... 32

FEATURES

Record Dome: It's Made of 321 Prefab Panels.. 34
Memphis Steam Plant Nears Completion..... 40
Air Conditioning Costs Cut 27%..... 48
Long Island Expressway: Worst Almost Over... 52

INTERNATIONAL

Errant River Plagues New Delhi..... 59

FIELD AND OFFICE

Corner Caps Compress Under Impact..... 63
Makeshift Blade Speeds Work..... 64

NEW PRODUCTS

Clearing Blade Has Stinger..... 69
High Stacking Lift Truck Has Heavy-Duty Engine 70
White Cure Reduces Thermal Cracks in Concrete 70
Modified Fork-Lift Handles Bulky Loads..... 70
Compressing Machine Tests Soil Shear Strength 72
Rotor-Type Valves Offer Leak-Proof Seal..... 72
Plans Copied in Seconds With "Copytron"..... 72
Publications 75

BUSINESS AND FINANCE

Outlook: Bigger Outlays Coming..... 113
Post Office Promises Contracts..... 116
New Law Could Aid Dambuilding..... 116

LABOR

AFL-CIO Takes the Offensive..... 119
New Hiring Plans for Plumbers..... 119
Freedom in Labor Relations..... 120
Long Strike Settled in Toronto..... 120
Voters Take the Union Side..... 121
Temporary Heat Pact Revision..... 121

Reader Comment... 6
Calendar 11
Washington Observer 19
Obituaries 76
Books 79
Legal 81
Unit Prices 86
Materials Prices 91
Construction Reports. 93
Statistics, Indexes... 111
Editorials 132

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

PRICE LINE HOLDS—Cement prices at mills in the Midwest and possibly in other regional markets, may hold at current levels through 1959. Marquette Cement Manufacturing Co., Chicago, says it won't change prices from now until 1959. Medusa Portland Cement Co., Cleveland, indicates it too will hold the line. Universal-Atlas, with mills in the Midwest and the Eastern Seaboard, will not boost its Midwest prices. It did not say what it will do elsewhere.

BIDS SOON ON SIX DAMS—Within the next five months, the U. S. Bureau of Reclamation will take bids on six earthfill irrigation dams: Stanaker and Willard Dams, Utah; Prosser Creek Dam, Nevada; Gray Reef Dam, Wyoming; Merritt and Sherman Dams, Nebraska. USBR also plans to call for bids on 446 miles of power transmission line, 50 miles of pipeline, 176 miles of laterals and drains, 50 miles of roads, 110 miles of canals, 30 miles of river channelization, 13 pumping stations and two small power plants.

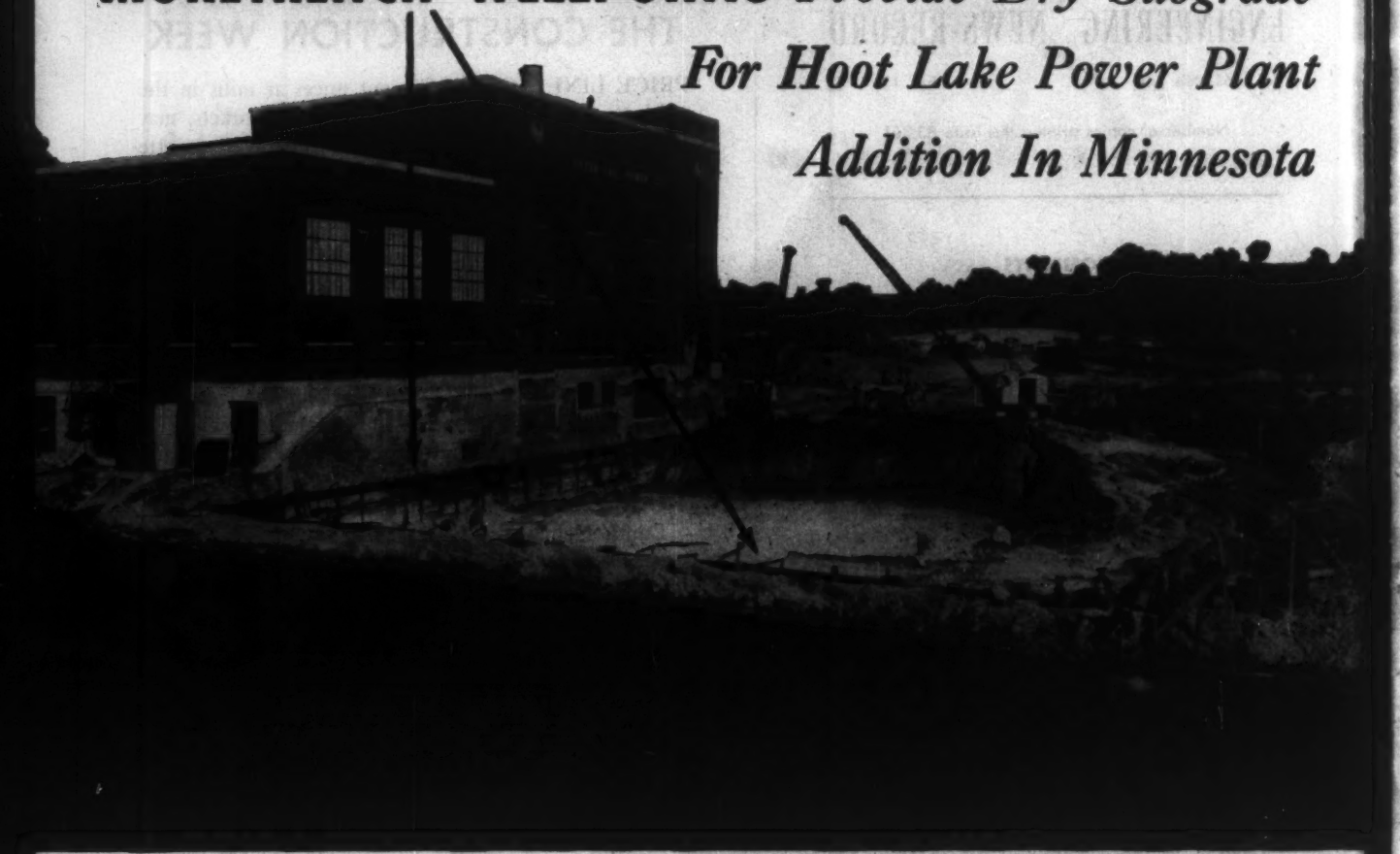
100 YARD SCRAPER—R. G. LeTourneau's much touted 100 cu-yd earthmover made its first public appearance this week at the LeTourneau proving grounds at Longview, Tex. The machine is more than 100 ft long. It has two bowls and a 130 ton carrying capacity.

WEDDING BELLS?—Engineers Joint Council and Engineers Council for Professional Development have begun what looks like a hopeful flirtation. Three men from each group are working on a joint committee to develop a plan for closer affiliation. EJC's representatives are A. B. Kinzel, Louis R. Howson and George Holbrook, past presidents, respectively, of the mining, civil and chemical engineers. Speaking for ECPD are Warren L. McCabe, of Brooklyn Polytech; Harold Hazen, MIT; Jewell Garrelts, Columbia.

NEW DAM FOR RIO GRANDE—The Texas State Board of Water Engineers has okayed Diablo Dam, proposed second project in a flood-protection program of the International Boundary and Water Commission. The U. S. and Mexico would share the $70 million cost.

BATTLE OF THE BEAVERS—A dam-busting combination of men, machines and dynamite is trying a new tack after three counterattacks by a colony of 30 beavers. The beavers' dam on the Neebing River in Ontario was flooding a nearby quarry. Three times construction men tore down the dam to relieve the flooding. Each time the beavers repaired the gap in their home. Now the men plan to kidnap the busy beavers and let them do their dambuilding elsewhere.

MORETRENCH WELLPOINTS *Provide Dry Subgrade For Hoot Lake Power Plant Addition In Minnesota*



Owner: Otter Tail Power Co., Fergus Falls, Minnesota
Engineers: Burns & Roe, Inc., New York, N. Y.
Contractor: T. F. Powers Construction Co., Fargo, No. Dakota

To insure a safe, dry foundation for a 53,500 KW addition to the Hoot Lake Station Power Plant near Fergus Falls, Minnesota, Moretrench Wellpoints pulled the water level down 12'.

Material consisted of gravel and boulders on the river side, fill next to the existing structure, silty sand and clay on the remaining two sides.

Twenty-four hours after pumping started, the contractor was excavating in the dry. He writes us that the operation of the wellpoint equipment "surpassed expectations".

Expect the *BEST* when you predrain with Moretrench! Ask us anytime for our ideas on how you can work profitably "in the dry".

Catalog on request.

MORETRENCH CORPORATION

90 West St.	4900 S. Austin Ave.	7701 Interbay Blvd.	315 W. 25th St.	Rockaway
New York 6	Chicago 38, Illinois	Tampa 9, Florida	Houston 8, Texas	New Jersey
CO 7-2283	Portsmouth 7-4212	Tampa 61-1881	Underwood 4-7774	Oakwood 7-2100

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington
Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario
Brazilian Representative: Oscar Taves & Co., Ltd., Rio de Janeiro

WASHINGTON OBSERVER

• Ike will have trouble holding down spending in new Congress

● **Construction will be right in the middle of the fight President Eisenhower is promising on the new "spenders" elected to Congress.** The President promised to use his remaining two years in the White House trying to whittle back every program.

Housing, highways, airports, Army civil works, reclamation, military construction are all involved. Total federal spending on construction will be close to $7 billion this year. If the President does make an all-out fight, the battle will be furious.

Mr. Eisenhower is correct in judging that the almost 2-to-1 Democratic majorities in House and Senate will lean more toward spending. The Northern-Western Democrats just elected have measurably increased their power. The power of the coalition of Republicans and the Southern Democrats has declined. But on most public works matters, the Southerners are apt to be just as liberal as the so-called Northern New Deal wing of their party.

—

● **A big new omnibus housing bill will be passed** to fill the gaps left by failure of Congress to pass one before it went home for election. Mr. Eisenhower will have problems holding down the bill's provisions:

FHA mortgage insurance authority will be expanded, and there'll be a drive to liberalize terms.

More authority to Fanney Mae for purchase of mortgages will be pushed, particularly the program that boosted starts this year.

Other programs will be included such as college housing, special programs for the aged, and the like.

Spending on the interstate highway network is an issue that can't be avoided. Democrats will want to keep spending high. This means either increasing federal user taxes to bring the program back to pay-as-you-go, or extending the law to allow the trust fund to run at a deficit.

Increased airport construction to meet jet-age needs must be decided; Democrats will try again to enact something like the $100 million a year program President Eisenhower vetoed before Congress went home.

Army civil works, hydro projects and reclamation gained new allies on Election Day. There'll be a fight on voting appropriations for the first time on authorized projects. The backlog would take an estimated $4 billion to complete. There'll be another authorization bill voted; such issues as a federal high dam on the Middle Snake River will get a new lease on life.

Legislation to help economically depressed areas is almost a certainty now.

A bigger atomic power program seems a better bet.

TVA will get bond-issuing authority for plants needed to meet power needs in its service area.

US RUBBER CONVEYOR BELTS

Higher speeds, greater loads, longer life —with fewer belt plies!

The unusual thing about this self-propelled loader is the fact that it is equipped with a *4-ply* belt which is turning out a more satisfactory performance than the *5-ply* belt it replaced. This 4-ply belt is a U. S. Rubber Giant® (style EN), 54′ long, and is doing such a good job that the operator is very well satisfied with its excellent performance.

The service is rugged—handling sand and gravel at speeds up to 700 fpm over small pulleys, under severe weather conditions, sun and ozone.

These belts—like all "U. S." belting—are engineered to always assure you of cost-saving performance and durability. Belts to service your requirement are available, right from stock, at your local "U. S." Distributor.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

Mechanical Goods Division

US RUBBER **United States Rubber**

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

Construction Bonds: The Trend Is Down

Year	Approval Rate	Total Proposed
1956	90%	$2.7 billion
1957	81%	$764.2 million
1958	68%	$2.1 billion

Voters Curb Spending Plans

Voters last week signaled for a "go slow" on proposed construction spending by state and local governments.

They apparently approved only 68.3% of the dollar volume of bond proposals that would have led to construction. Of the total $2.1 billion in construction issues, $1.4 billion was approved; $659.7 million was rejected. This confirmed trends noted earlier this year (ENR Sept. 18, p. 184).

However, these figures are subject to revision. One issue, now on the defeated list, may move to the approved list after a full recount. That's New York State's proposal to authorize $100 million in bonds to finance low-interest mortgages for private construction of middle-income housing.

Only once since 1953 have voters killed a larger dollar volume of bond proposals. That was in 1955 when only 36% of $1.5 billion in propositions passed. Two issues caused the top-heavy rejection rate then. They were a $750 million highway financing program in New York State and a $100 million water supply project in New Jersey. Not counting these in the total, 82% of the issues proposed were ratified in '55.

The New York issue was accepted when resubmitted in 1956 as a $500 million project. The New Jersey proposal was finally approved last week after it had been trimmed to $45.9 million.

The approval-rejection rates this year are in sharp contrast to those of 1956 and 1957 (see table), and 1953 and 1954.

In 1953, voters ratified 92% of the $925.7 million in proposals at the November election. In 1954, they accepted 88% of $1.5 billion in proposals. So the trend definitely is down.

Present tax burdens at all levels of government may be the reason for the high rate of rejections this year. The public is fully aware that the approval of new and added debt today promises greater tax burdens tomorrow.

It also appears the public is giving more than casual thought to the issues. It is apparently quite willing to pay for services it considers essential, but it also must have doubts about the value of some local construction plans.

Water supply and flood control rated high. Voters approved all of the $284 million in these propositions.

Public buildings got rough treatment. Up for action was $560.1 million. The electorate threw out $275.8 million—or 50.8% of that total. Bulk of the rejection came in Illinois, where voters turned down $248 million proposed for public buildings.

Schools were well received. Of the $415.6 million in proposals, 83.6% was approved.

Voters ratified 68.1% of the $42.6 million in sewer financing proposals. There's an interesting sidelight here: Omaha voters approved an $8 million sewer program by a 4-to-3 margin. This same proposition was one of 13 resoundingly defeted in June when it was part of a $53.1 million public improvement program.

Housing issues received generally good support. There were proposals of $575 million and $400 million was approved for a 69.5% approval rate.

• **Some education needed**—The election indicates the public will not act on an issue unless it is made a matter of major interest. Discussion of the propositions before elections may not change the outcome, but it will result in action by a larger proportion of the electorate.

In California, for example, the right-to-work proposition was hotly debated. It was also acted on by most of the voters. More than five million Californians voted; and more than four million of them registered approval or disapproval on the right-to-work proposal.

In New York State, 5.7 million cast their votes; but only 1.9 million bothered to act on the propositons.

Although the New York propositions were not ignored by state officials and the press, there was little concerted action to arouse voter interest.

The sharp drop in approvals for proposed spending could have some effect on Congress.

The Democratic sweep is seen by some as a mandate for Congress to embark on liberal spending programs. But when congressmen take a close look at the outcome of bonding propositions they may be inclined to think twice.

Returns Available

ENR will have a full list of the construction bond issues that were approved in the election. If you would like a copy, write: The Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

"No" Vote Won't Stop Portland

City will expand water system despite voters' refusal to support construction of power plants at dam sites

Portland, Ore., will continue its 10-year, $45 million water-system expansion despite voter rejection last week of a scheme to make money on it. The voters turned down a $5 million bond issue that would have permitted installation of 24,000 kw of generating capacity at two city-owned dams.

Momentum for the expansion program, now in its second year, was provided by a 13 day midsummer hot spell in 1956. Water consumption hit 181 million gal a day, a new record.

Studies were undertaken on ways and means of bolstering storage on Portland's 218 sq mi Bull Run watershed, some 25 miles from the city on the slopes of the Cascades near Mt. Hood. The studies developed a program that will result in major new storage by 1960. Portland officials believe that will be soon enough to prevent any shortages. But they were given a scare this year when a new record daily consumption of 218 million gal was reached.

In 1956, Stevens & Thompson, Portland consulting engineers, recommended construction of a new storage dam to supplement the existing 31,000 acre-ft Lake Ben Morrow behind Bull Run Dam No. 1. The new structure will be a 115-ft-high earthfill called Bull Run Dam No. 2. Its capacity will be 18,400 acre-ft.

When the 200-ft-high Bull Run Dam No. 1 was built in 1928, penstocks capable of serving two 8,000 kw generators were installed. But the power was never developed. Generators here plus an 8,000 kw generator at Bull Run No. 2 were planned if the voters had approved. The estimated 98 million kwh annual power production would have returned $294,000 a year to the city, according to Stevens & Thompson figures. The election results end these plans.

Bull Run Dam No. 2 is five miles downstream from No. 1 and 1,500 ft upstream from the city's headworks. Work is now under way on a $3.3 million contract held by Green Construction Co., Seattle, for construction of diversion tunnels, intake structures and outlet works. This includes a 1,000-ft-long, 15-ft-dia diversion tunnel and a 1,700-ft-long, 7-ft-dia supply tunnel. Both tunnels will be steel lined. The smaller tunnel, in effect, serves as a safeguard to assure a constant supply.

Construction of Bull Run No. 2, originally scheduled for 1959, has been set back to 1960 due to delays resulting from a five-week strike of operating engineers in the Portland area last summer. Meanwhile, model tests are under way at Oregon State College on the design of the 450-ft-wide spillway. Design capacity will be 30,000 cfs, with maximum flood of record 21,000 cfs.

Portland has already contracted with Portland General Electric, a private utility, to supply surplus water to a PGE power installation downstream. This will be done in winter periods when water demand is low and power demand is high. Two of the three conduits from the Portland system headworks pass within 200 ft of the lake that supplies water for a 22,000 kw PGE hydro plant.

PGE will pay the city 0.83 mills per kwh for electricity generated from the surplus water. The surplus is expected to be available from October to June. By then, one of the city's three pipelines can serve the city's needs.

To bolster its storage further, Portland this summer built a 37-ft-high, 850-ft-long earthfill dam on one of the high tributaries of the Bull Run River. The small dam, at elevation 3,035 ft, will conserve early spring snow melt, backing up usable storage of 1,000 acre-ft (known as Lake Boody) for "one shot" release in critical summer periods. Other such high storage dams in tributary canyons are considered for the future.

The Portland system improvements are part of a program announced early last year by Portland Commissioner of Utilities Nathan A. Boody. The program incorporates additions to all system facilities, including elevated tanks, transmission lines, supply lines and pump houses.

Latin Contractors Plan Bidding Cleanup

A campaign to clean up bidding procedures in both public and private contracting in Latin America is under way.

The first Inter-American Congress of the Construction Industry met in Caracas, Venezuela, last week and adopted resolutions calling for:

- Detailed disclosure of winning bids.
- Participation in public contract awards of third party representatives.
- Creation of national registries of qualified contractors.

Congress delegates also began erecting the framework of a permanent organization designed to stimulate greater cooperation among the constructors of the American nations.

The week-long sessions were attended by 95 delegates from 14 countries. The U. S. was represented by Lester C. Rogers, president of Bates and Rogers Construction Corp. of Chicago and former president of the Associated General Contractors, and James D. Marshall, AGC's executive director.

Problems resulting from current Latin American contract award and enforcement procedures received top priority in the discussions. The Mexican delegation charged that too often formal bidding is merely a cover-up for secret prior arrangements or other irregularities.

For contract enforcement, the congress adopted a statement offered by the Venezuelan delegation demanding contract fulfillment guarantees that are adequate and easily executed. The statement reflects current Venezuelan difficulties with non-fulfillment of major public works contracts.

Several reports criticized government inroads in the construction field. The consensus of those attending is that greater reliance should be placed on private contractors for the construction of public works. The Argentine delegate cited the efficiency and the economy achieved by the U. S. Corps of Engineers through private contractors.

In pointing up the benefits of greater inter-American cooperation, Caracas builder Alfredo Rodrigues Amengual, president of the congress, pointed to the similarity of construction problems within all Latin American countries.

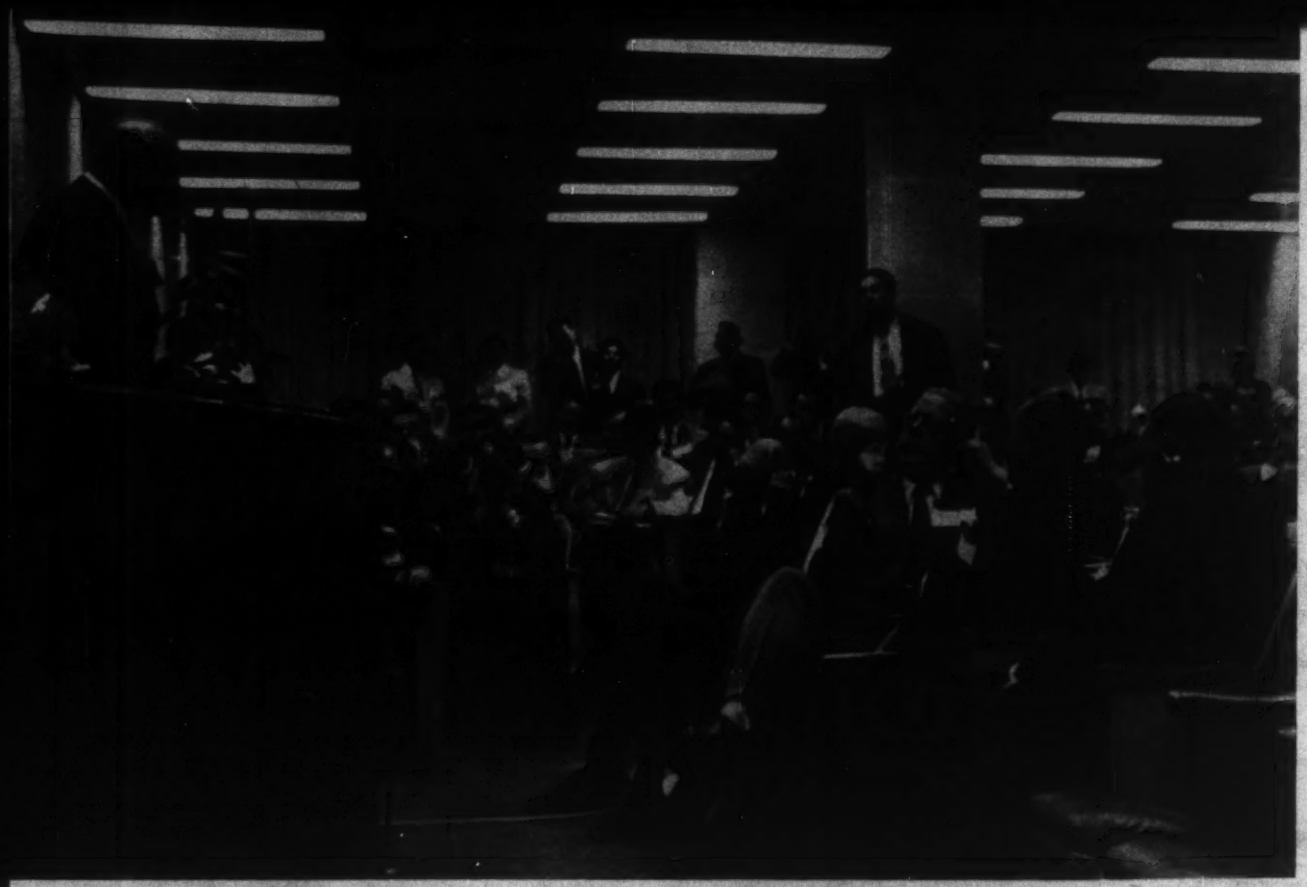
Inadequate financing methods, outdated construction procedures, difficulties in acquiring modern equipment, and a dearth of skilled construction labor were listed among the problems that can be improved by what Mr. Rodrigues calls "a cross-fertilization of Latin construction industry."

The congress also took steps to break down national barriers between builders. It authorized the Venezuelan delegation to draft preliminary plans for a firmly knit inter-American construction industry federation with a permanent secretariat in Caracas.

Spanning Glen Canyon With a Big Cable

The largest lock coil steel cable ever fabricated—4 in. in diameter—now spans Glen Canyon. It will be used in concreting the 700-ft-high arch dam being built in the gorge for the U. S. Bureau of Reclamation's Colorado River Storage Project (ENR July 31, p. 28).

The cable and its supports—190-ft-high moving towers—will be able to deliver 50-ton concrete buckets anywhere on the dam-site. A similar cable will be hung on smaller towers to move underneath the higher cableway. Merritt-Chapman & Scott, New York City, holds the $108 million contract for the dam. It expects to place concrete at the unprecedented rate of 9,000 cu yd daily.



International Road Federation delegates from 64 countries met in Mexico City last month. Their consensus:

Road Men Will Open Earth's Last

Peter Weaver
Mexico City Bureau
McGraw-Hill World News

In the next decade highway builders will carve roads through the unexplored, as yet unpassable areas of the world.

That's the consensus of highway construction men from all over the world who came to Mexico City last month for the third meeting of the International Road Federation.

Their views were bolstered by IRF Executive Director Robert O. Swain. He reported a 20% increase in highway spending this year over last.

Close to 1,000 delegates from 64 countries had a chance to hear 100 technical papers. But the big news to come out of this summit meeting for roadbuilders was how much highway construction is already under way and how much will be ready to go within the next 10 years.

The Arctic, the Amazon Basin, Africa, Asia—all have big projects.

Delegates from the U. S. were surprised by the extensive plans for road construction—projects that will cover not only countries but entire continents. Here is what they heard:

1. Africa: Boom Under Way

Several delegates outlined a continent "bursting its shackles" by roadbuilding, S. O. Eklund, director of the South African Road Federation (affiliate of IRF), sketched a map of South Africa (at right) to show the enormous highway programs going on there and to outline two of the longest highway jobs on the drawing boards.

A look at his sketch shows the country has barely been touched with roads. Mr. Eklund says work on a paved, 3,000-mile through road from Capetown to Nairobi will be in its final phases by 1962. About 2,000 miles of the project are already built. But the toughest part remains: $30 million worth of road through the uninhabited, virgin forests of Rhodesia and Tanganyika.

Mr. Eklund says the 3,000-mile trunk road and thousands of miles of feeder roads leading from it will unite this part of Africa. The area that will benefit covers 3 million sq mi and 60 million people. The road will open deserts, plains and jungles containing fabulously wealthy mineral lodes.

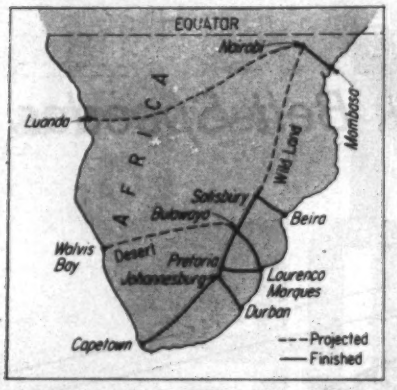
South Africa is also planning a second huge highway project. This one would pass almost entirely through wild lands, from Luanda in Portuguese West Africa to Mombassa in East Africa, a distance of 3,400 miles.

A series of feeder roads would lace these two highways together and connect the east and west coasts of Africa. They would lead from such important coastal cities as Lorenco Marques, Portuguese East Africa. Lorenco Marques is a modern port with a big rail center and heavy materials handling equipment. It is a trading center for exports of chrome, asbestos and coal from the heart of Africa and imports of materials and machinery.

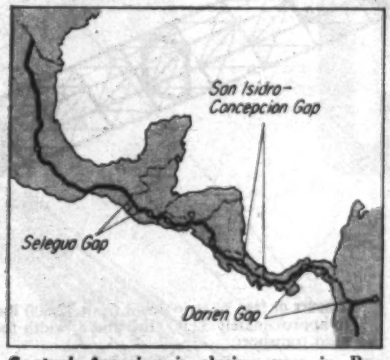
Durban and Beira on the east coast and Walvis Bay on the west coast also have roads into the Capetown-Nairobi trunkline either completed or planned.

2. The Americas: Last Link

Although roadbuilding continues at a great pace in the U. S., delegates in Mexico City showed more interest in the "exotic" or far-off areas of the continents now being laced into the U. S. highway colossus by such roads as the Pan American Highway in Central



South Africa has a 3,000 mile road network under way.



Central America is closing gaps in Pan American Highway.

Frontiers

America and the Canadian "Roads to Resources."

The Pan American Highway was the subject of several hot debates, particularly on "who will finance construction of the Darien Gap?" Thomas Guardia, Jr., of Panama, IRF sub-committeeman for Darien Gap, claims the "myth of the impassibility of the Darien strip is now broken . . . we have surveyed the 400-mile route, a road can go through."

U. S. Congressmen–some were at the meeting–are cool to feelers for U. S. financial support. Reasons: They consider the cost too high ($70 to $100 million for a 400-mile route); and they do not consider closing the gap in the Pan American Highway essential to U. S. defense.

But South Americans, Central Americans and some North Americans showed interest in Darien at the IRF meeting because it would be the last link in the Inter American Highway, from Alaska to the tip of Patagonia–18,000 miles south. "It must come," one South American delegate said, adding that the U. S. and South America must move closer together economically.

The Pan American Highway from the U. S. to Panama is almost a reality now, delegates were told. Only a small section in Guatemala and a section in Costa Rica are left to complete. Optimists claim you will be able to drive to Panama by the end of next year.

The road will open up a whole new area to truck and auto traffic. It will also open up a whole new area of international disputes over trucking rights; Mexico doesn't allow U. S. commercial trucks across the border.

3. Canada: Ahead of Reds

C. W. Gilchrist, of Canadian Good Roads Association, told ENR Canada is going to push a 10-year-highway program toward the Arctic Circle. It will cost at least $1 billion.

Mr. Gilchrist, in informal huddles with delegates, reported on a recent visit to Montreal of two Russian highway officials (L. V. Litvin, deputy secretary of Russia's road program, and M. V. Michailov, head of Russian Highway Research). He revealed that Canada was ahead of Russia in the push to the north. But, he said, "Russia is putting top importance on this area." (Canadians and Russians exchanged bales of technical papers and books on such subjects as perma-frost and other problems peculiar to cold-zone roadwork.

4. Europe: New Links

Yugoslavia seems to be the pivot point of a scheme to run a trans-Europe highway into the Middle East through Italy, Yugoslavia, Greece and Turkey.

Successful talks were held earlier this year between Yugoslavia and other countries involved in the Mid-East Highway. It is hoped that remaining difficulties will be ironed out in further talks scheduled next May in Belgrade.

With this highway completed, it is believed that Europe could finally be connected to the Middle East and all of Africa by road in a system paralleling the Pan American and Inter American Highways.

Baron Charles de Wouters, a European general director of IRF, told ENR of several other major European highway plans. He said that a plan was being pushed for a road to link the Scandinavian Peninsula with Denmark. A tunnel under the English Channel is also going to be pushed hard in the next year, according to Baron de Wouters. He said a decision on the 27-mile project should be made next year.

Switzerland will be making big highway news in the next five years. This summer, Switzerland for the first time authorized a federal system of highways. IRF officials helped work out a 20-year program for the Swiss roads.

5. Russia and Asia

The Soviet Union and Communist China were among the focal points of private discussions.

The Canadians say the Russians who visited Montreal were unofficially invited to Mexico to observe and be available for question-answer exchanges. But pressures from either Moscow or Washington, or both, stopped the Russians from attending. There were no delegates from the Communist bloc.

Pressure might build to invite Communist representation at the next meeting, slated for the U. S. in three years.

Some delegates want to know about the progress of roads in Red China. India's delegate, T. G. Menon (no relative of Krishna Menon, India's U. N. delegate), says, "It certainly would be interesting to know what they are doing with their roads . . . after all, we are right there next door." Red China is reported to have tripled its road milage since 1949.

Nationalist China is spending about $5 million this year to pave the intricate road system on Formosa.

A Korean delegate, Churl Hee Lee, says almost all Korea's bridges were destroyed during the Korean war and roads were severely damaged. He says $2.5 million is going into rebuilding of bridges and roads this year and $3 million will be spent next year. Most of this is U. S. aid. Korea fears the Quemoy situation will divert economic aid southward, Mr. Lee says.

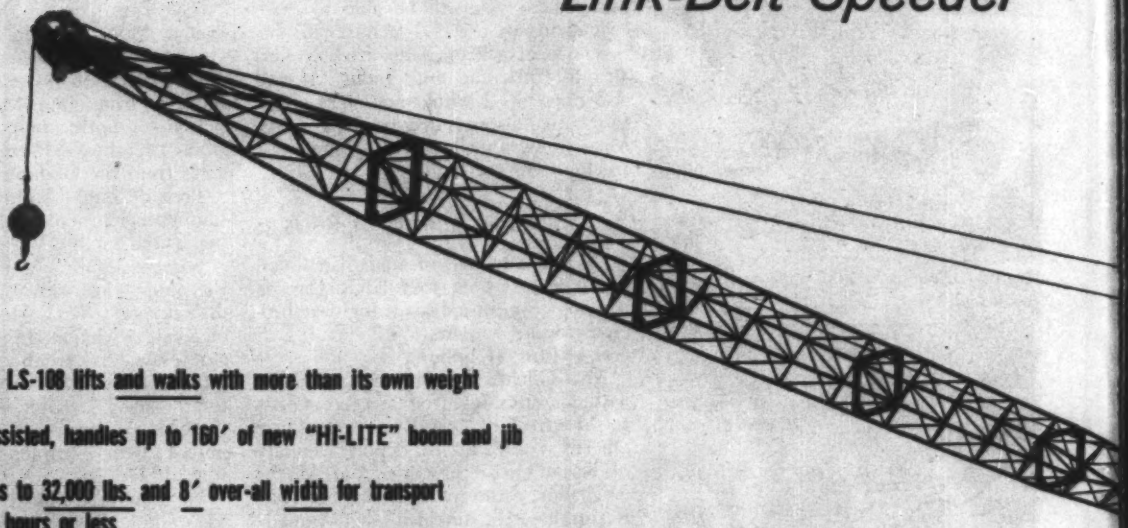
6. Tollroads Debated

A Cuban delegate, Ignacio Fernandez, proposed that IRF promote tollroads. Russell E. Singer, executive vice-president of the American Automobile Association, strongly opposed the resolution. Other delegates joined what became the most heated discussion of the business sessions. The final resolution was a compromise accepting tollroads provided their earnings are not diverted and the tolls are rescinded as early as possible.

IRF delegates were treated to the biggest construction machinery show ever assembled in Latin America (see picture). Show booths reported "not many sales, but many contacts." Some European delegates were miffed by the show, claiming, "IRF should remain non-commercial." Most of the equipment shown was U. S.-made.

IRF is a private organization backed financially by automotive manufacturers, oil companies, tire companies, construction equipment and materials producers and construction companies. Its two previous meetings were in Washington and Rome. The organization maintains offices and staffs in Washington, London and Paris.

Link-Belt Speeder

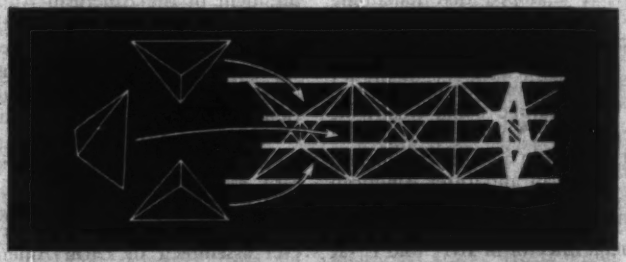


- **New LS-108 lifts and walks with more than its own weight**
- **Unassisted, handles up to 160′ of new "HI-LITE" boom and jib**
- **Strips to 32,000 lbs. and 8′ over-all width for transport in 2 hours or less**

Here's a machine that combines high lifting capacity with exceptional mobility and transportability. Imagine a lifting crane that lifts and walks with 80,000 lbs. and yet quickly strips down for transport from 78,200 lbs. to approximately 32,000 lbs. and an 8 ft. overall width in two hours or less.

In addition, compare this list of lifting crane features with any other crane on the market: power hydraulic controls, two-speed travel in either direction, reversing clutches for either or both main operating drums, independent swing and travel, independent rapid boomhoist with boom-lowering clutch, powerful third drum and many others.

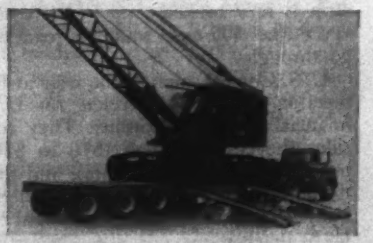
See your Link-Belt Speeder distributor for new catalog and full information or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa. 14,907



Revolutionary "HI-LITE" booms feature new tetrahedron design that virtually eliminates the effect of whipping, twisting and deflection normally experienced with long booms. Sets of internal cross-braces meet at common points along the 44" square box section forming scores of tetrahedrons (pyramid-like structures) . . . provide maximum resistance to stress in every direction. High-strength steel tubing is light weight . . . permits longer booms than previously possible.

2 hours or less to strip down from 72,800 lbs. to approximately 32,000 lbs. and 8' width for road transport.

1. Use the powered retractable gantry to remove counterweight.



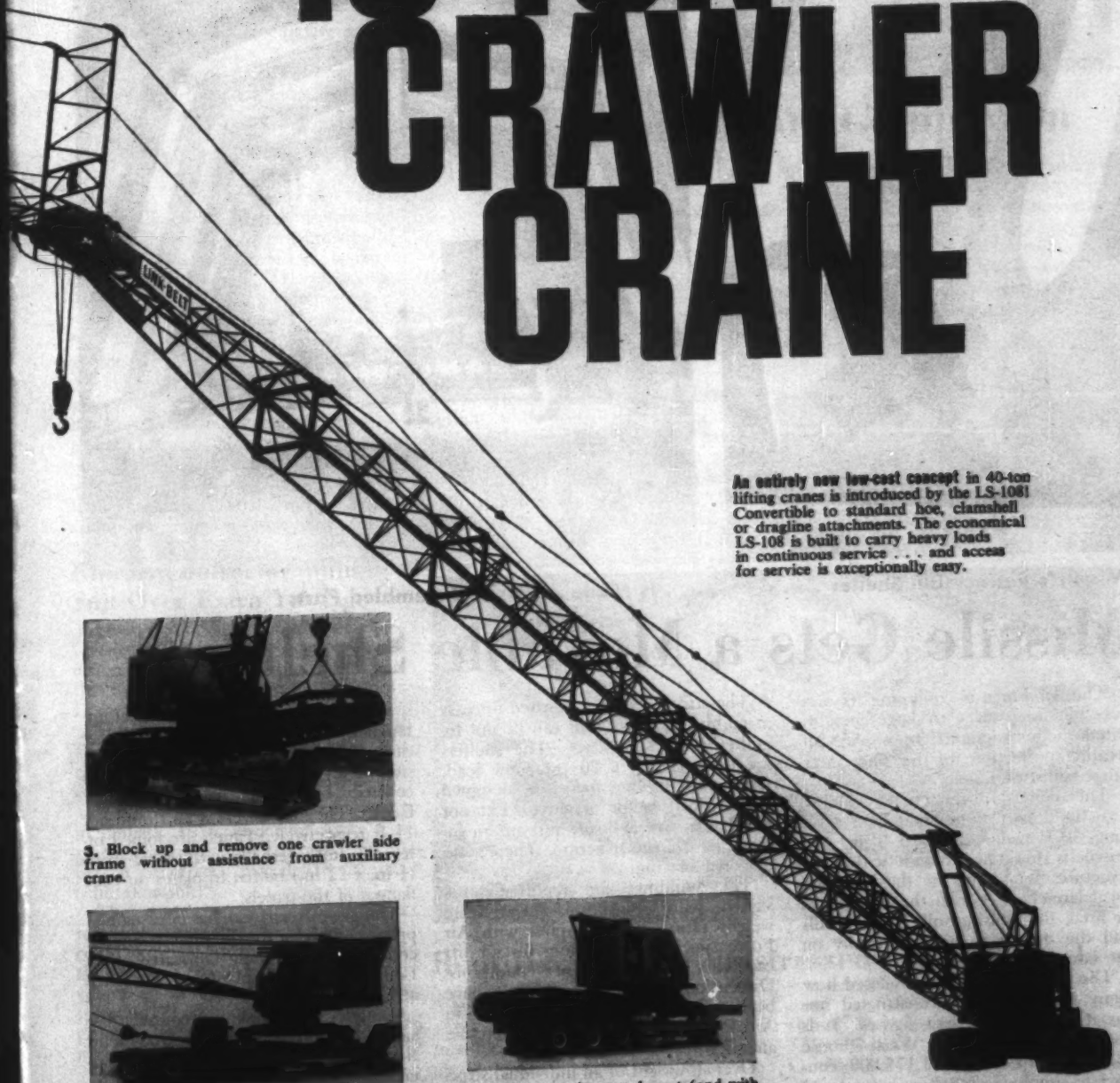
2. Move LS-108 onto lowboy from the side, taking advantage of power steering.

LINK-BELT SPEEDER

It's time to compare . . . with Link-Belt Speeder

announces

NEW 40-TON CRAWLER CRANE

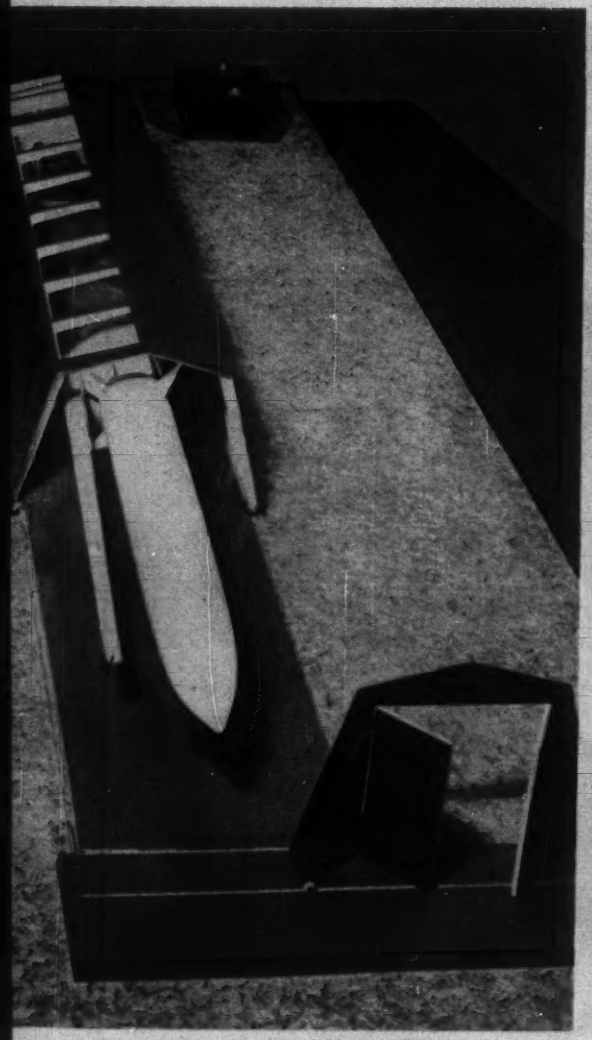


An entirely new low-cost concept in 40-ton lifting cranes is introduced by the LS-108! Convertible to standard hoe, clamshell or dragline attachments. The economical LS-108 is built to carry heavy loads in continuous service . . . and access for service is exceptionally easy.

3. Block up and remove one crawler side frame without assistance from auxiliary crane.

4. Block up and remove other crawler side frame.

5. After removing attachment (and with crawlers on separate trailer) you are ready to go at only 32,000 lbs. and 8' width.



Missile's Retractable Shelter . . . **. . . Is Made of Easily Assembled Parts**

Missile Gets a Movable Shelter

The Air Force is equipping its overseas missile bases with large prefabricated shelters designed to provide all-weather protection for the Thor inter-range ballistics missile.

The shelters are retractable, windowless buildings, approximately 100 ft long, 30 ft wide, and 20 ft high. The missile is stored horizontally within the structure, remaining in that position until launched. When the Thor is to be fired, the housing rolls back on rails and the missile is raised vertically on the launching pad.

The Air Force has not disclosed how many shelters will be constructed nor has it released any cost figures. It is known, however, that Westinghouse Electric Corp. has a $1,175,000 contract to supply electrical equipment and gear units.

The structures are fabricated for easy assembly—an entire unit can be put together in 12 man-days. The shelters are designed for a 20 psf snow load; stress carrying members are designed with a load factor of three. Exterior panels carry shear loads and are an integral part of the structure. There is no diagonal bracing.

The buildings are reportedly designed with maximum strength to weight ratio. This complies with Air Force specifications calling for air lift capability under emergency conditions. Dimensions of shelter components have been tailored for ease of transport in Air Force Globemaster and Hercules aircraft.

Over-all weight of an individual structure is approximately 100,000 lb, the Air Force reveals.

All beams included in the shelter are tapered, spot welded assemblies of low carbon steel. Side and roof panels consist of 2½-in.-thick paper honeycomb covered by 0.040 galvanized steel facing. They measure 8 x 16 ft and 8 x 11 ft respectively. Panels are joined internally and externally with sealed strips (⅛ in. x 2¾ in.) bolted to plates on edge flanges of the panels.

Douglas Aircraft Co. has been named prime contractor for the project. Shelter components are being fabricated at its Long Beach, Calif., plant and assembled at launch sites.

Douglas undertook the contract because the prefabricated shelters lend themselves well to its assembly line operation. The structure was designed by Southwest Research Center, San Antonio, Tex.

House on a Bridge?

No: Chicago mayor rejects prefab promotion scheme

Chicago's Mayor Richard Daley has turned thumbs down on plans to construct a prefabricated aluminum model house on a temporary bridge spanning State St., one of the city's busiest downtown thoroughfares.

Mayor Daley rejected the proposal on recommendation of Lloyd Johnson, Commissioner of Streets and Sanitation, who said the structure would be dangerous to pedestrians. Mr. Johnson also suggested it would cause traffic congestion and reduce effectiveness of street lighting.

The prefab house, manufactured by National Homes Corp., Lafayette, Ind., was planned as a sales promotion stunt during the annual convention of the National Association of Home Builders in January.

Previous disapproval had been voiced by John Goodridge, president of Illinois Brick Co., Chicago's largest brick-building firm. He threatened a taxpayer suit against the city. Mr. Goodridge described the plan as "highly improper" because it allowed use of a public facility for the advertising purposes of private industry.

The brick manufacturing executive also called the proposal an affront to the building trades during a period of unemployment. Moreover, he said, it would encourage the public to spend money outside of Chicago. He claimed the support of several building trades and other union organizations.

Riprap Contractor Wins Suit Over Extra Yardage

The Wunderlich Contracting Co., Omaha, Neb., has been awarded an additional $224,378 for riprap placed on the face of Cherry Creek Dam, near Denver, Col.

The Federal Court of Claims in Washington, D. C., agreed with the construction firm's interpretation of the contract.

Work on the dam was completed in January, 1950, under an Army Engineer contract that specified $5.50 per cu yd of rock placed "18 in. plus 6 in. allowable."

The contractor interpreted this as meaning rocks that filled the 18 in. could protrude up to 6 in. He argued that he was entitled to payment on a volume basis as long as he met the specification minimum. He did not claim payment for volume beyond the maximum.

Measurements on the slopes of the embankment indicated an average riprap thickness of 22 in.

Dallas Center Nears Completion

The $35 million Southland Center development in downtown Dallas, Tex., is almost completed. The project includes the 42-story Southland Life Tower, tallest office building west of the Mississippi River, and the 28-story, 600-room Sheraton-Dallas hotel.

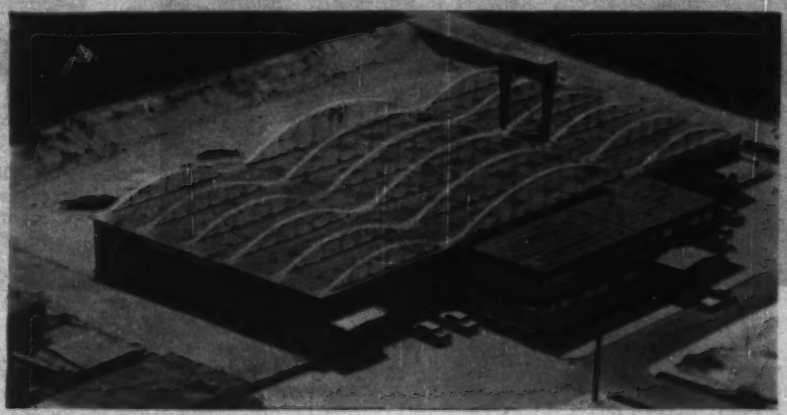
Foundations also have been constructed for a future 36-story office tower adjacent to the Southland Life Tower.

The two towers will have exterior curtain walls made of prefabricated lightweight-aggregate concrete panels, anodized aluminum and glass. The structural steel building frame is bolted with high tensile-strength bolts.

The 36th and 37th floors of the hotel will be cantilevered out 8 ft from either face of the building. This will make room for a window-walled private club on the 36th floor and for restaurant facilities on the floor above. The 41st floor will be a public observation section. A glass-enclosed promenade will connect the second floor of the hotel with the office building.

The center has five underground levels. Three of these will provide parking facilities for more than 2,000 automobiles. The fourth and fifth basements will house mechanical equipment. Topping the hotel will be a heliport servicing the entire center.

Welton Becket & Associates, Los Angeles, are the architects; J. W. Bateson Co., Inc., Dallas, is the general contractor.



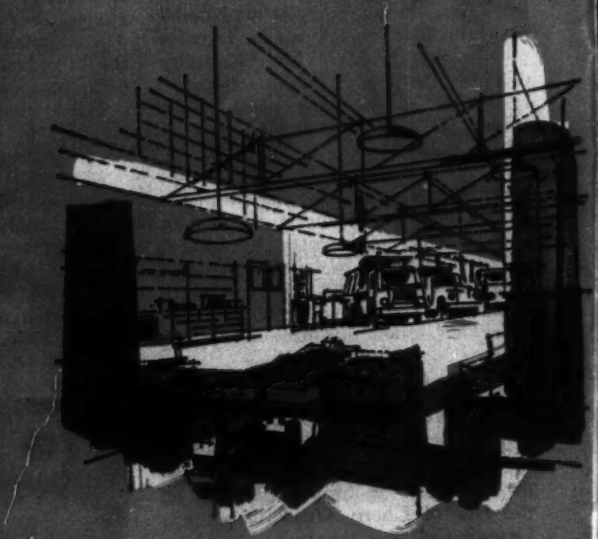
Roof Hangs From Prestressed Concrete Arches

Precast, prestressed concrete arches add a light touch to the Plinex plastic tube factory in Havana, Cuba, and hold up the roof at the same time. Spanning 60 ft at either end of the building and 90 ft across the center bay, the arches carry prestressed concrete beams and slabs. They form the roof of the $250,000 factory. The engineers, Saenz-Cancio-Martin, Alverez y Gutierrez, designed the water tank of reinforced concrete on stilts above the roof arches.

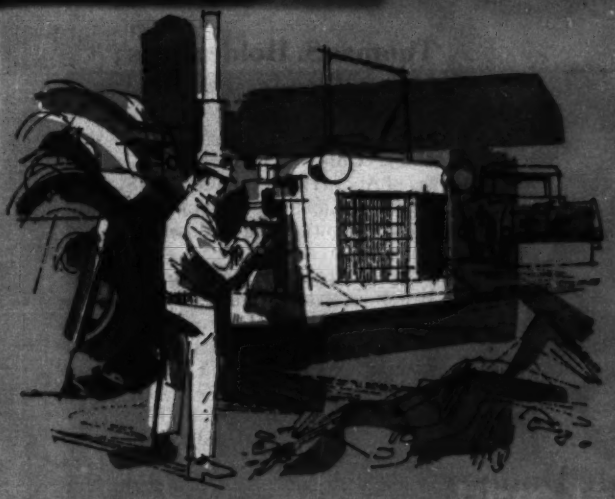
SERVICES UNLIMITED

Here's how your Cummins Distributor keeps Cummins construction Diesels earning more profit!

AVAILABILITY More than 300 sales and service points throughout the United States and Canada are standing by to serve you with engines, genuine Cummins parts and service.



MODERN SHOPS Each Cummins Distributor has a staff of experts, using modern testing equipment, ready to handle any job. Their "know-how" cuts downtime—saves you money.



INSPECTIONS The Cummins Two-Inspection System for off-highway diesels provides a pre-delivery and an on-the-job check in the machine, to protect your power investment.

SERVICE SCHOOLS Cummins experience is made available through factory-conducted courses and traveling schools, teaching the proper care and servicing of your Cummins diesel.

MOBILE SERVICE Many Cummins Distributors offer the extra service of a mobile parts unit. Parts are delivered to job-site. Customers can have this service on a regular routine basis.

UNIT EXCHANGE PLAN This special plan cuts repair costs. Worn units can be exchanged, usually, on the spot. A complete stock of genuine Cummins Parts is always on hand.

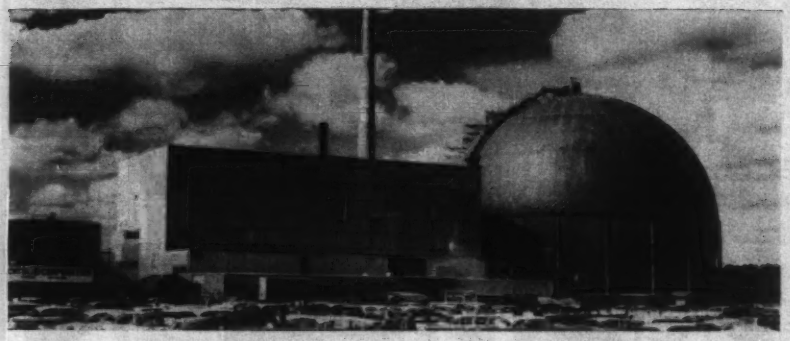
When you're a Cummins Diesel owner, you can be sure of getting the kind of service that will keep that engine working profitably "round the clock." That's because your Cummins Distributor is an expert in the business—devoted exclusively to the sale and service of diesel engines.

By the same token, the Cummins Engine Company is devoted exclusively to the building of diesel engines—and has been for more than a quarter of a century. This combined experience assures you of dependability and performance, plus top notch service. No wonder more and more contractors specify their power and standardize on Cummins. It's easy to standardize! Cummins makes 32 diesels available—from 100 to 600 h.p.—for every type of construction machine.

CUMMINS MORE PROFIT

gives you the big plus

Atom Plants Move Ahead . . .



1. $45 Million Dresden Reactor Is Half Done

Construction progress on the $45 million, 180,000 kw Dresden nuclear power station passed the halfway mark this month. America's first large boiling-water-reactor plant is being financed entirely by private industry. The all nuclear unit is located 50 miles southwest of Chicago.

Critical tests and low-power operation are scheduled to start shortly after completion late next year. Full power operation should start about mid-1960.

The 190-ft sphere housing the reactor and auxiliary equipment was completed and successfully tested last March. Research and development, and design and engineering phases of the station are now essentially completed. Components of the nuclear steam supply system are being installed.

General Electric Co. has the responsibility for its design and construction. Bechtel Corp. is handling the civil, structural and mechanical work and a major portion of the electrical work.

General Electric will operate the reactor during testing and demonstration, prior to beginning operation.

2. $75 Million Fermi Project Due in '60

Construction is moving ahead on the $75 million Enrico Fermi atomic power plant near Detroit. It's scheduled for completion in 1960.

Key parts of the project are shown in the photo above: (1) reactor containment building; (2) equipment entry chamber; (3) sodium tunnel; (4) sodium storage and purification building; (5) plant offices and control center; (6) boiler house foundation; (7) water treatment plant; (8) turbine house location; (9) atomic information center; and (10) construction offices.

The nuclear portion of the plant is being built and will be owned and operated by Power Reactor Development Co., a non-profit group of 21 companies. Research, basic design and testing are responsibilities of Atomic Power Development Associates, Inc., another non-profit group of companies.

The non-nuclear portion of the plant, a 150,000 kw turbine-generator station will be operated on steam purchased from the reactor section. This portion is being built and will be owned and operated by the Detroit Edison Co.

Thomas S. Holden Dies; Headed Dodge Publishing

Thomas S. Holden, 72, vice chairman and former president of the F. W. Dodge Corp., New York City, publishers of ARCHITECTURAL RECORD, SWEET'S CATALOGS and the DODGE CONSTRUCTION REPORTS died suddenly November 3.

Long a recognized authority on construction statistics and building industry business, Mr. Holden joined F. W. Dodge in 1919 as chief statistician, becoming vice president in charge of statistics and research in 1927. He served as president from 1941 to 1953.

Mr. Holden was educated as an architect but his first job was as a mathematics instructor, first at the University of Texas and then at Massachusetts Institute of Technology. He practiced as an architect for a few years in Boston and in Akron, Ohio. Mr. Holden was an honorary member of the American Institute of Architects and served as president of the New York Building Congress from 1935 to 1940.

Aerial Mapmaking Requires No License

Licensed civil engineers and land surveyors have no monopoly on the preparation of aerial maps through photogrammetry, according to a recent decision of the California Supreme Court.

A registered civil engineer sought the court's injunction to prevent the state controller from paying unlicensed contractors. The California Division of Highways, on advice of the state's attorney general, has let such contracts to the low bidder—licensed or not.

The trial court upheld the contracts and the district court of appeals upheld the decision. The judgment became final when the California Supreme Court denied the plaintiff's petition for a hearing.

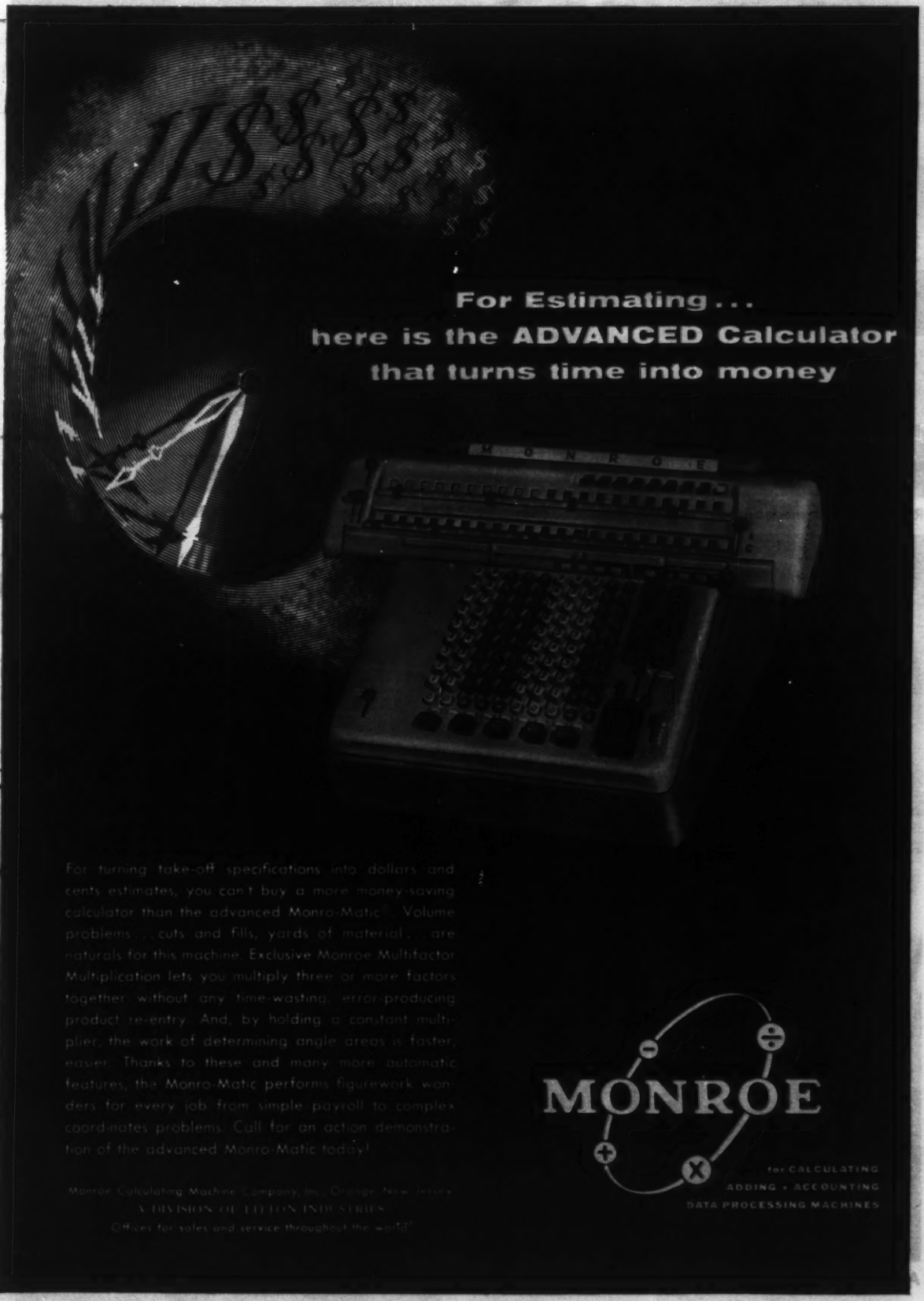
Five Dredging Jobs Slated For Southeast Alaska

To improve vital waterways in southeastern Alaska, the Army Engineers has scheduled five new channel and harbor projects for 1959. The work is estimated at nearly $3 million.

Bids will be called in January on the largest project, a $1.2 million dredging job to open Gastineau Channel at Juneau.

Bids will be advertised in March on channeling work at Neva Strait in the Sitka area, which may cost about $392,000.

The other three jobs, already under contract, are dredging of a small boat basin at Skagway and channel dredging at Dry Pass and Rocky Pass.

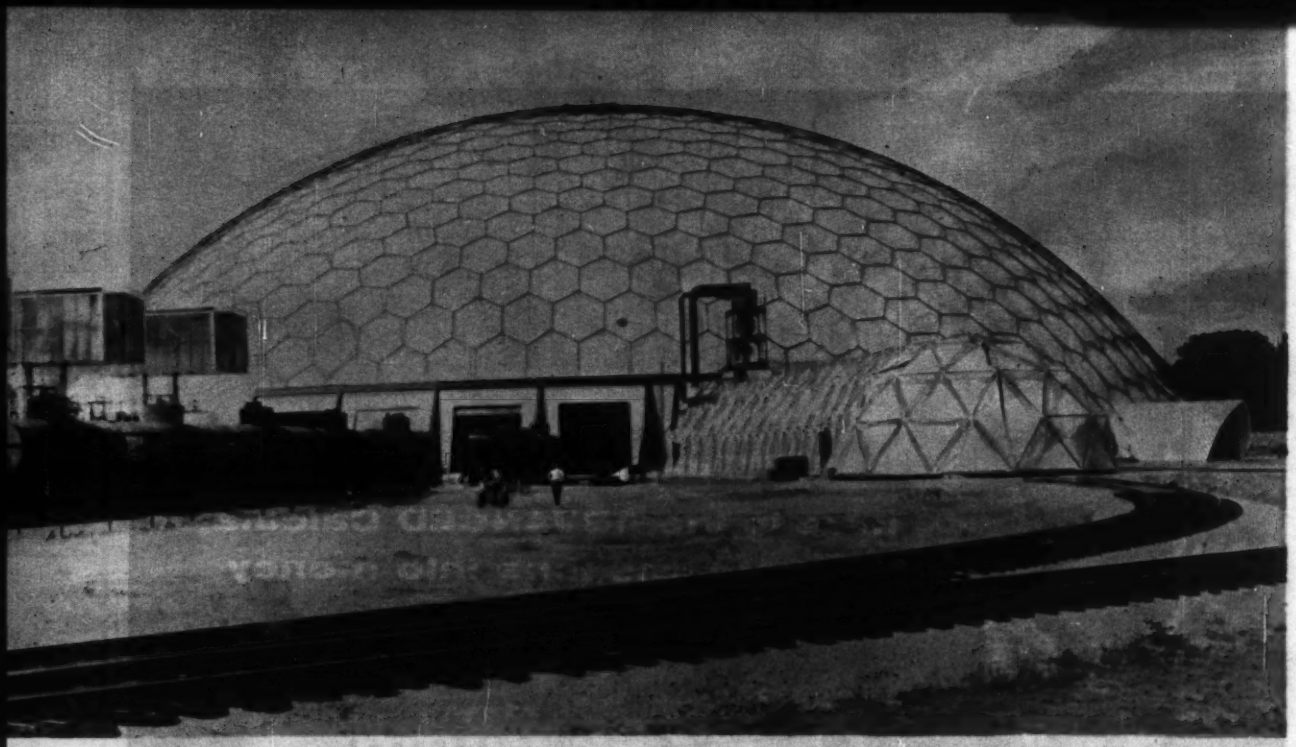


For turning take-off specifications into dollars and cents estimates, you can't buy a more money-saving calculator than the advanced Monro-Matic. Volume problems . . . cuts and fills, yards of material . . . are naturals for this machine. Exclusive Monroe Multifactor Multiplication lets you multiply three or more factors together without any time-wasting, error-producing product re-entry. And, by holding a constant multiplier, the work of determining angle areas is faster, easier. Thanks to these and many more automatic features, the Monro-Matic performs figurework wonders for every job from simple payroll to complex coordinates problems. Call for an action demonstration of the advanced Monro-Matic today!

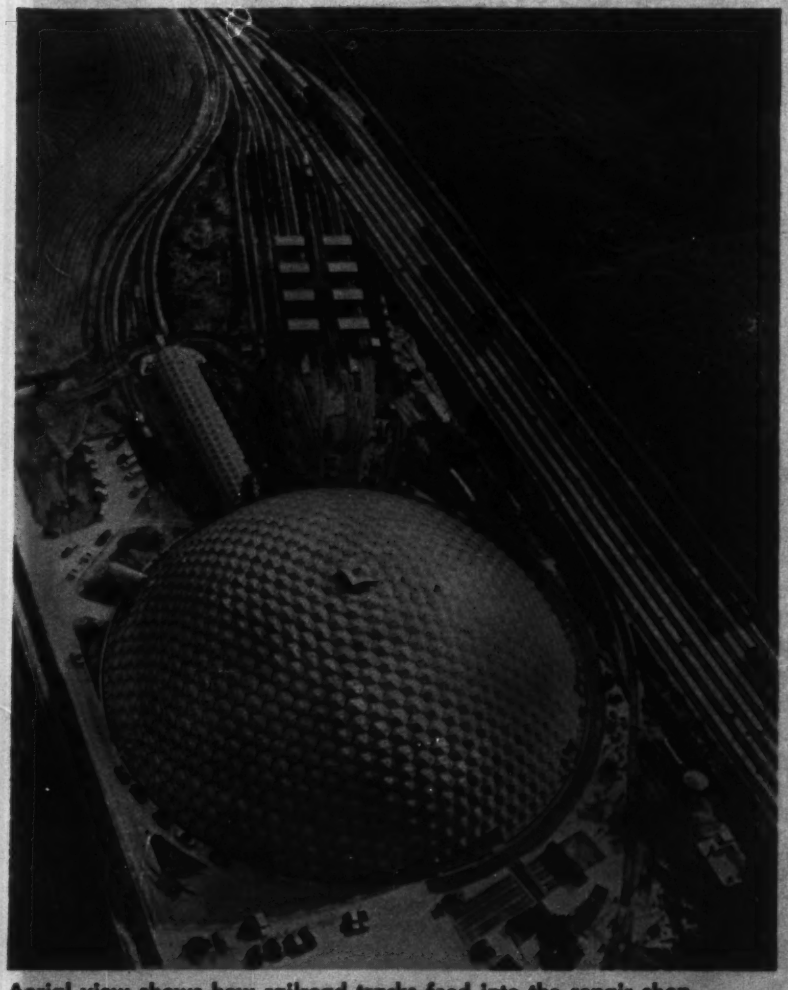
Monroe Calculating Machine Company, Inc., Orange, New Jersey
A DIVISION OF LITTON INDUSTRIES
Offices for sales and service throughout the world

MONROE

for CALCULATING
ADDING • ACCOUNTING
DATA PROCESSING MACHINES



Record-size dome building has no internal supports. It's 324 ft wide at the base, 120 ft high.



Aerial view shows how railroad tracks feed into the repair shop.

Giant Dome

One of the world's largest dome-shaped buildings has been completed at Baton Rouge, La. The Union Tank Car Co.'s 384 ft dia, free-span, circular structure is now in operation as a repair shop for tank cars. It cost $3 million, less than $10 per sq ft.

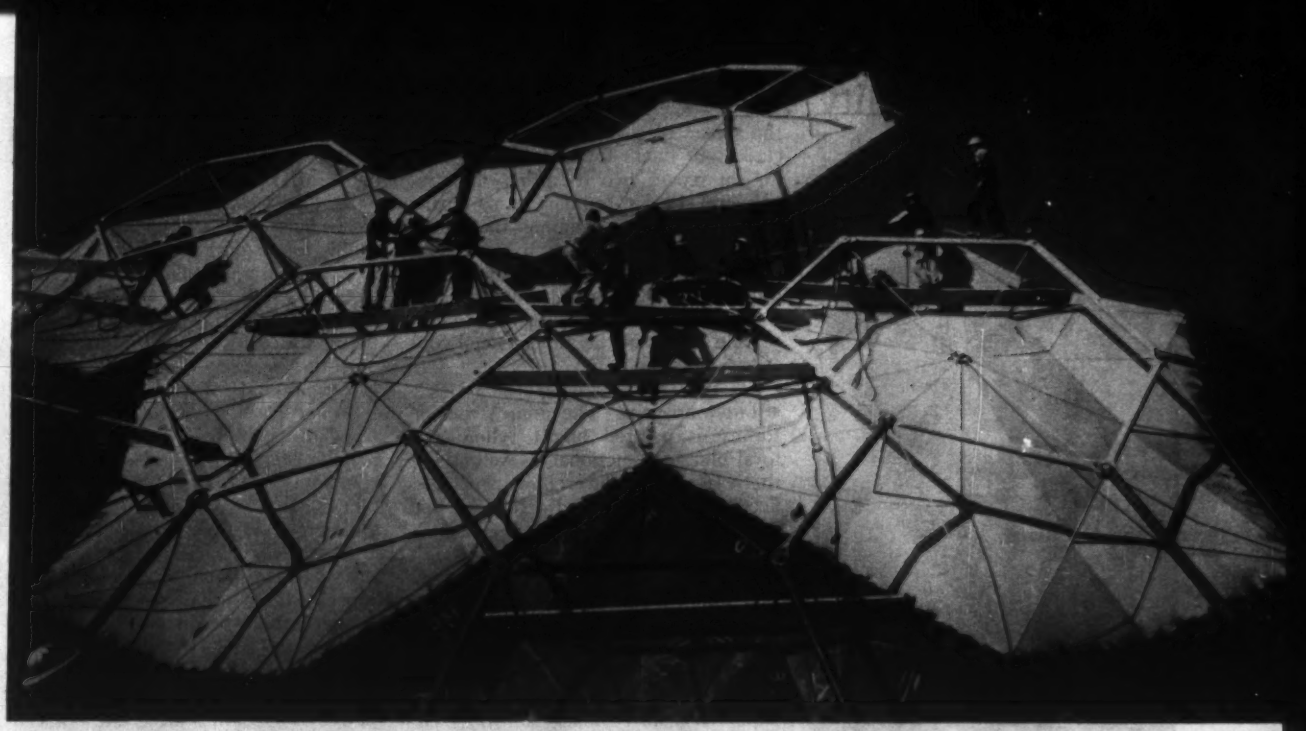
The building's design and erection represent a revolutionary approach to what may be a new era in industrial building, the designers believe.

The all-steel "Union Dome" has no internal support and provides 110,000 sq ft of unimpeded floor area under its 120 ft rise.

The dome is made up of 321 hexagonal steel panels welded together and strengthened by a spider-web framework of rods and pipes. The dome itself cost less than $1 million, well under $10 per sq ft of floor area covered. The $3 million total includes repair and maintenance facilities.

Inside the dome is another hemispherical structure, 80 ft high and 100 ft in dia. This one houses administrative offices, employee quarters, material storage space and a glassed-in control tower. The control tower overlooks the entire area and serves as nerve center for the repair and maintenance operations.

The dome's design is based on patents for structural framing held by R. Buckminster Fuller, designer of the DEW (distant early warning) line domes of



It's made of 321 six-sided steel panels, welded together. Network of rods and pipes give it strength.

Encloses Railroad Repair Shop

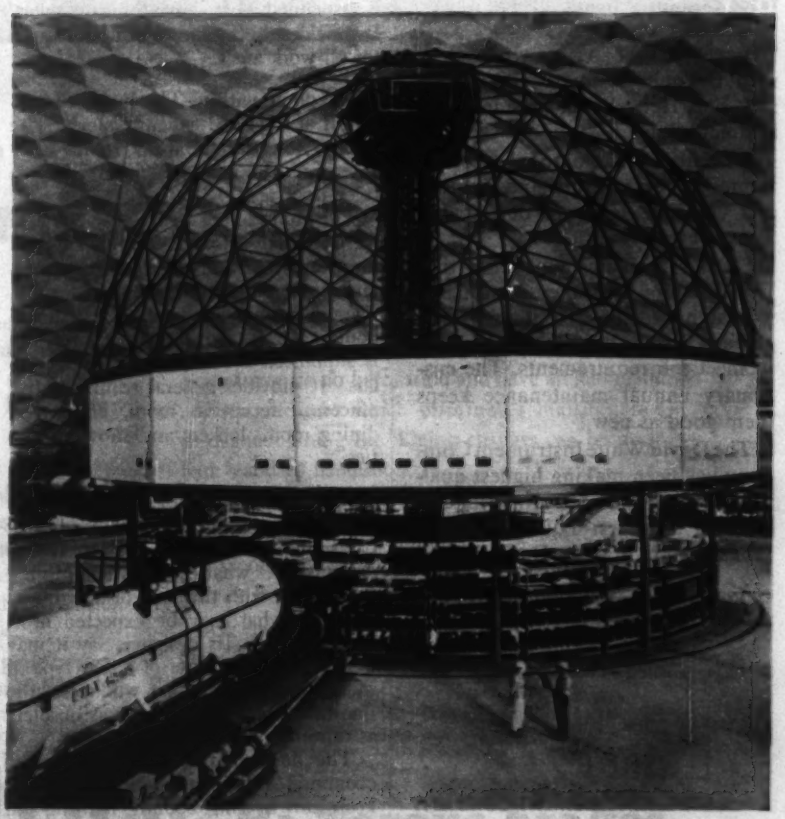
the U.S. arctic radar-warning system. Special applications of Mr. Fuller's design principle were developed to include the design of an interlocking system of pipe-and-rod trusswork that gives the building added strength. The steel panels were fabricated at the site. The building was erected from the ground up by four long-boom cranes. No scaffolding was required.

Above the foundations, the dome weighs 567 tons. It is designed to stand up under high winds. When only half erected, it withstood a hurricane that hit the Baton Rouge area.

• **Geometric design**—The dome is about a one-quarter sphere, designed and constructed as a three-dimensional curved truss. The truss system is about 4 ft deep, and designed as a unit cell system of octahedrons (8-plane, solid figure) in which the involuted 11 ga sheet steel surface material serves as the weathering surface and as the inner member tension system of the truss.

The outer hexagonal array is composed of 4 in. steel pipe sections. They are about 9 ft long, positioned with ¾ in. tension rods. The compression type elements and the tension rods lie along great-circle grid lines. The steel sheet fold lines repeat the geometry of the pipe rod system.

The dome houses 36 individual repair track positions, corresponding to



Dome-within-the-dome houses offices, storage, control tower (top).

Cites White's ability to "rough it"

Bert Heuvelman, President, Instrument Sales 3947 W. Lawrence, Chicago —Shown adjusting a David White T8200 Contractors' Transit.

"The real value of a surveying instrument lies in its ability to 'rough it,' " says Bert Heuvelman, President, Instrument Sales.

"It must be able to absorb extremes in temperature and weather and continue to serve dependably and accurately.

"It has been my experience that David White instruments are made with standards of precision and ruggedness that far surpass those needed to meet job requirements. The customary annual maintenance keeps them good as new."

The David White Instrument Company has been making highest quality surveying and optical instruments for over 50 years. You can be sure "the sight is right with a David White."

Write today for your free David White surveying instrument catalog. Or see the complete line of David White instruments at your blueprinter, or lumber, building supply or hardware dealer.

DAVID WHITE

INSTRUMENT COMPANY

Dept. A, 2051 N. 19th St., Milwaukee 5, Wis.

. . . Record dome has another dome inside

the spokes of a giant wheel. They include four tracks for tank cleaning, 10 for car repair, two for heavy tank repair and 14 for ordinary tank repair. There are three incoming tracks, including one for inspection, and three outgoing tracks, including one that leads through the paint tunnel. This tunnel is 200 ft long, 20 ft high and 40 ft wide, and is of the same general construction as the dome.

• **Two-tone paint**—The dome's outside surface is painted bright yellow and royal blue for functional, as well as aesthetic reasons: The yellow panels reflect the sun's heat and accentuate the panel's tendency to be in tension; the blue outer framework of pipes and rods absorbs the heat and increases compression (tendency of the framework to expand).

The dome's interior surface is painted an off-white. The second dome, inside, is the same color. Its 15 supporting steel pillars, stairways, elevator shaft and framework are blue.

• **Lighting**—Lighting is primarily artificial because sunlight can enter only through a 4 ft opening at the dome's apex. Main source of light is a 332 ft dia circle of 106 color-corrected mercury vapor lamps. This lighting system is suspended 34 ft above the work areas. It provides 50 ft candles of illumination for all work areas.

• **The dome within**—The interior structure is of steel and concrete block. The control tower is its apex. It has a diameter of 100 ft and encloses 7,500 sq ft of floor area.

The ground-floor level is an open area for materials storage. An open-deck mezzanine, 9 ft above ground line, contains some offices and the plant's extensive telephone dial system. The main floor is 18 ft above ground level and is supported by a ring of 15 steel pillars. It provides general administrative offices, a reception room, employees' dining room, lockers and shower facilities.

• **Future of big domes**—The successful completion of the Union Tank Car Co.'s big dome near Baton Rouge demonstrates what can be accomplished structurally with this type of design and indicates what may be expected of it in the future. Its designers say it may well be the forerunner of a new type of industrial structure that will make the traditional factory buildings as obsolete as running boards on automobiles.

The dome has these assets: over-all economy; fast construction; low upkeep; easy heating, cooling, lighting and ventilation; flexible work space; unimpeded materials and work flow; and visual control of all work areas from one central point.

Big-dome enthusiasts foresee domes enclosing entire shopping centers, sports arenas, athletic fields, schools, civic auditoriums, office buildings and factories.

But the most promising future for these structures is in industry, proponents believe. Union Tank has broken ground for a second big dome in Wood River, Ill. The company also plans to establish a dome division to prefabricate and erect domes for other companies (through its subsidiary, Graver Tank & Mfg. Co. Inc., East Chicago, Ind.).

In developing and merchandising this type construction, the two prime considerations undoubtedly will be the relatively low cost per square foot of floor area covered and the speed of erection. No records were set in constructing the Baton Rouge dome; its size warranted a "go slow and be safe" procedure. But considerable attention will undoubtedly be given to streamlining the construction processes on future domes.

As more of these big domes are built, the cost per square foot of floor area probably will be reduced. On the Baton Rouge job, that cost was well under $10 per sq ft. Its designers point out this is significantly less than the cost of conventional structures of comparable size.

The bill of materials required only seven items: ¼ in. sheet steel; 4 in. pipe; 1¼ in. and ¾ in. rods; 2 in. sleeves; 1¼ in nuts; and washers.

Almost any type of material can be used for a dome. Union Tank used steel for its Baton Rouge structure because it figured to be the most economical for a dome that size. Smaller domes, however, have been made from aluminum. Future spherical structures may be made of transparent or translucent sheets of rigid plastic to make natural light available. Even collapsible domes of flexible plastic or fabric are feasible, according to the designers.

• **Who did it**—R. A. Lehr is project engineer for the Union Tank. Designs were developed under his supervision in cooperation with engineers of R. Buckminster Fuller. George S. Hunt, New York City, industrial designer for the project, directed the color scheme and was responsible for the design and layout of the administrative offices, reception area, paint tunnel and for landscaping the 36 acre site. Abe Feder, New York City, was lighting consultant. The Nichols Construction Co., Baton Rouge, was the general contractor and J. Y. Sherburne was project superintendent.

Not for B. F. Goodrich Hi-Torque Brakes

On a grade like this, chances are the operator of a tractor-scraper combination could not depend on conventional brakes for most efficient spreading control. With B.F.Goodrich Hi-Torque Brakes, down hill spreads can be accurately placed and controlled for proper depth.

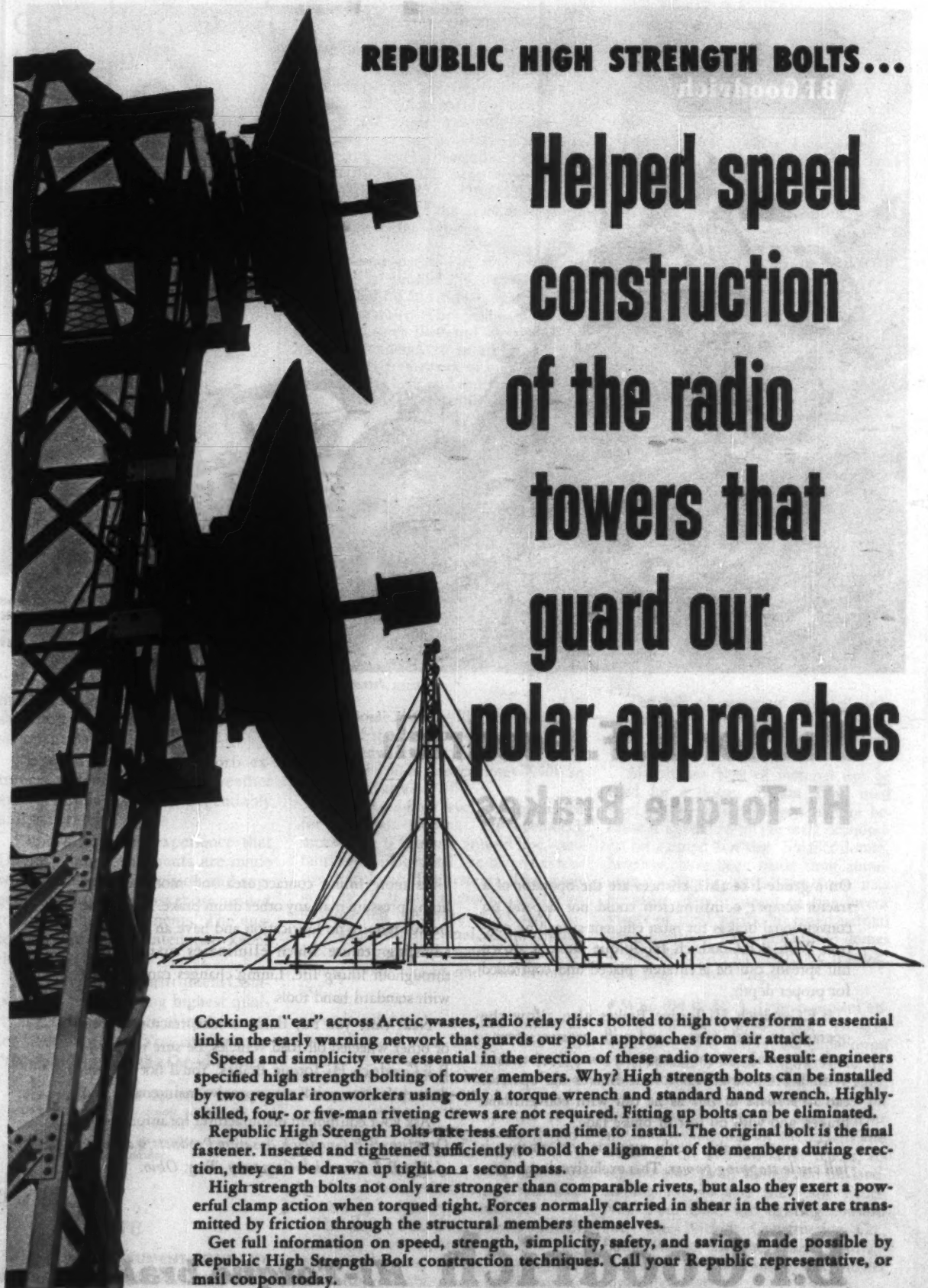
B.F.Goodrich Hi-Torque Brakes also allow the operator to work faster—and with greater safety—even on terrain that was formerly considered unsafe. With B.F.Goodrich Hi-Torque Brakes the operator can *stop twice as fast* as he can with conventional brakes, and with no fear of brake fade.

The secret of this vastly superior performance is *full circle stopping power.* This exclusive design provides more lining contact area and more constant lining pressure than any other drum brake. Hi-Torque Brakes require no lubrication and have an automatic adjusting feature which eliminates maintenance throughout lining life. Lining changes can be made with standard hand tools.

Next time you buy dump trucks, tractor-scrapers or other wheeled off-road vehicles, be sure to *specify* B.F.Goodrich Hi-Torque Brakes. You'll not only reduce cycle time, you'll cut expensive maintenance, too.

Ask your equipment manufacturer for information. Or write: *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Troy, Ohio.*

B.F.Goodrich ***Hi-Torque brakes***



REPUBLIC HIGH STRENGTH BOLTS...

Helped speed construction of the radio towers that guard our polar approaches

Cocking an "ear" across Arctic wastes, radio relay discs bolted to high towers form an essential link in the early warning network that guards our polar approaches from air attack.

Speed and simplicity were essential in the erection of these radio towers. Result: engineers specified high strength bolting of tower members. Why? High strength bolts can be installed by two regular ironworkers using only a torque wrench and standard hand wrench. Highly-skilled, four- or five-man riveting crews are not required. Fitting up bolts can be eliminated.

Republic High Strength Bolts take less effort and time to install. The original bolt is the final fastener. Inserted and tightened sufficiently to hold the alignment of the members during erection, they can be drawn up tight on a second pass.

High strength bolts not only are stronger than comparable rivets, but also they exert a powerful clamp action when torqued tight. Forces normally carried in shear in the rivet are transmitted by friction through the structural members themselves.

Get full information on speed, strength, simplicity, safety, and savings made possible by Republic High Strength Bolt construction techniques. Call your Republic representative, or mail coupon today.

SAVINGS IN TIME AND MONEY are two major advantages you gain through use of Truscon Vision-Vent® Window Walls. Their use helps maintain construction and interior-finishing schedule in any weather. "U" factor of insulated panels is equivalent to masonry wall. Send coupon for facts.

STRONG, LOW-COST ROOFING is provided by Truscon Ferrobord® Steeldeck. Flat or pitched areas are roofed over quickly. All work is done from top. Ferrobord is available in 6", 12", or 24" widths. Ferrobord is clipped or welded directly to steel joists. Fully interlocked throughout for strong, tight joints.

TRUSCON "O-T"® STEEL JOISTS give you predictable and dependable load-bearing capacity. Every Truscon "O-T" Joist—shortspan series—is quality protected. Each is backed by the Steel Joist Institute Seal of Approval. Be safe . . . avoid inferior quality. Specify approved Truscon "O-T" Steel Joists for lightweight, fire-resistant floor and roof support.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. EN-6439
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send me full information on:

- ☐ High Strength Structural Bolts
- ☐ Truscon Vision-Vent Wall Panels
- ☐ Truscon Ferrobord Steeldeck
- ☐ "O-T" Steel Joists

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

Over 1,000 acres of former flood plain comprise the site of the 812,500 kw Thomas H. Allen electric generating

Largest One-Project Steam Plant Nears

The biggest steam power plant ever authorized at one time by any municipality is nearly completed in Memphis, Tenn. Its first unit is scheduled to go into operation this fall.

When completed, the $121 million station will boast an 812,500 kw output.

Notable among its construction features are counterfort-type foundation walls and an elaborate cooling-water system that handles 381,000 gal per min.

The 1,000 acre construction site is a low lying area, five miles southwest of the center of Memphis.

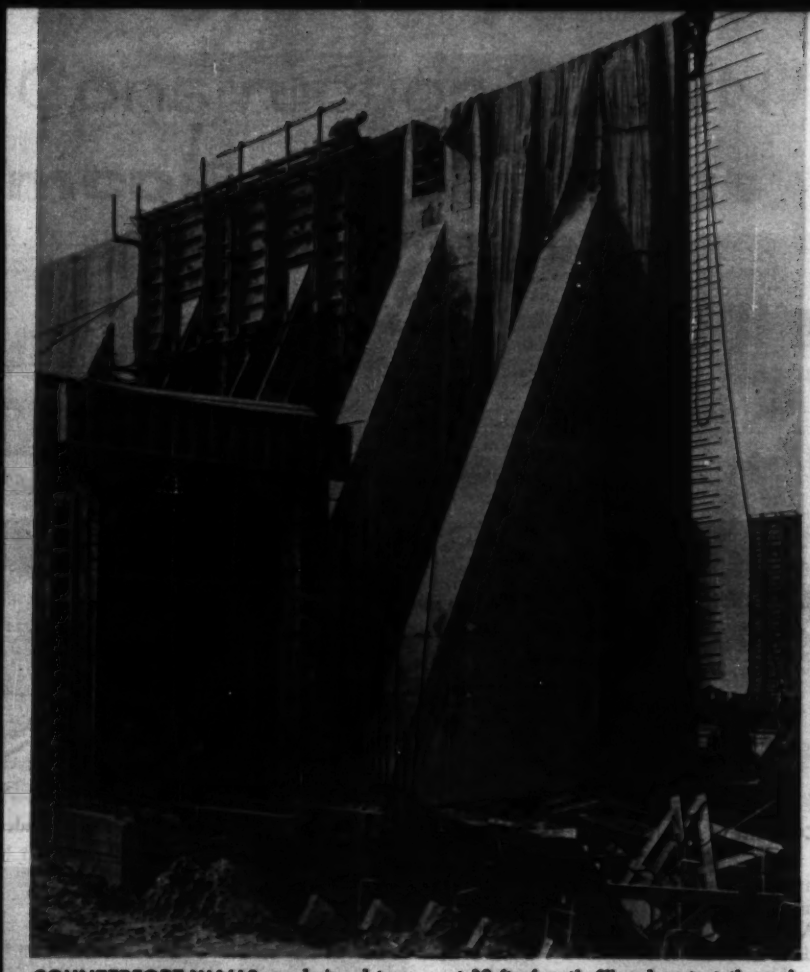
Part of the main structure is below grade. Exterior walls, instead of relying on inside steel framing to resist outside earth pressure, are constructed as reinforced concrete counterfort retaining walls. This unusual construction enabled the builders to secure the job quickly against floods—a threat in the low-lying area.

Some 150,000 cu yd of material had to be excavated to a depth of 20 ft for the building mat. Sand drains and a well point system kept the work area dry. At the bottom of the hole, 6,300 cast-in-place piles were sunk about 60 ft to support a 4 ft 8 in. thick concrete foundation slab 270 x 572 ft. The slab required 53,000 cu yd of 4,000 psi concrete and 4,751 tons of reinforcing steel.

Walls were built on the slab. The counterfort walls are 41 ft high. They are designed to support earth fill 39 ft high.

The entire work site was raised above flood-water level by covering the area with 3.74 million cu yd of fill material. More than 2.7 million cu yd was hydraulic fill dredged from McKellar Lake and the rest was hauled in.

plant near Memphis, Tenn.



COUNTERFORT WALLS are designed to support 39 ft of earth fill and protect the main building excavation from floods.

DEWATERING OPERATIONS minimize water seepage in the pumphouse excavation located in low land on the edge of McKellar Lake.

Completion

Wall pours extended the full 41 ft height of the walls. They were made in 12, 24, and 36 ft widths to minimize shrinkage cracks. Special steel forms 12 ft wide and 41 ft high were prescribed to speed up concrete-placing operations. Sloping of the counterforts, placed on 12 ft centers, were handled by using adjustable front and back forms.

An elaborate circulating system had to be devised because cooling water to be used in the operation of the plant runs into enormous amounts. Cooling water for the plant's three giant condensers will travel two miles through tunnels,

CONCRETE TUNNELS provide 550 mgd cooling water for the generating plant's three condensers.

manifolds and an open canal before it finally leaves the system downstream. About 550 million gal. will be required daily.

The tremendous water-circulating system begins with six 1,250 hp pumps at the edge of an inlet on McKellar Lake.

Each pump-pit section of the intake structure has its own gates and a pair of pumps. Combined capacity of the two pumps is 127,000 gpm against a head of 57 ft.

A trash rack of steel bars on 5 in. centers blocks heavy debris at the water inlet. Behind the rack, sets of traveling water screens stop small trash.

Water is pumped first to a concrete manifold. From there two 10 ft dia concrete pipes carry it 700 ft to another manifold located near the plant. Three 7 x 7 ft concrete tunnels take the water from this manifold to the condensers. Discharge from the condensers is collected in a third manifold 10 ft wide by 15 ft high.

Two seal wells prevent loss of siphon during low level of the Mississippi River. Between seal wells, the circulating water will travel some 4,000 ft through two concrete tunnels roughly 12 x 12 ft. At the last seal well, the water will flow over a weir and leave the tunnel. The remainder of the path to the Mississippi River is through a 4,400 ft riprap-lined canal, 30 ft wide at the bottom.

GATES play an important role in the cooling system's seal wells, which insure full flow under a designed siphon head of 27 ft.

The great length of the cooling water path is necessary to avoid recirculation. The warm condenser effluent must be discharged some distance downstream.

There are 13 bronze-faced iron sluice gates in the system. They range in size from 7 x 7 ft to 10 x 16 ft. Five of them are capable of withstanding an unseating head of 108 ft each. Gate closure was designed to eliminate the commonly used deep pockets, or raised sills, which sometimes cause trouble by collecting mud and debris. The gate closes on a sill flush with the tunnel invert. A heavy strip of resilient material on the bottom of the gate gives the sluice gate a "cushion closing seal." With flush sills, there is no turbulence

Canadian Construction "TOWN"
Built of Armco Steel Buildings

Construction camp of The Shawinigan Engineering Company, Ltd., consisting of Armco Steel Buildings, is in a remote location on the upper St. Maurice River in Canada. The hydro development being constructed will have a capacity of 246,200 kilowatts.

At Rapide Beaumont, ten miles north of LaTuque, Quebec, Canada, a hydroelectric power development project is under construction by The Shawinigan Water and Power Company, Ltd., Montreal, through its subsidiary, The Shawinigan Engineering Company, Ltd.

Because of the isolated site of this project, it was necessary to build a "town" to provide shelter for the 1,600 workers. Armco Steel Buildings were selected by the contractor for ten 80-man bunkhouses; a number of two- and three-bedroom apartments for personnel with families; a 44-man staff house; staff bungalow; caterer's staff house; multiple-unit mess hall; hospital with operating facilities; laboratory; triple-unit general office; electrical and pipe-fitter's shop; steam plant; and two stores buildings—a complete construction-site "town."

The contractor purchased these Armco Buildings because they could be easily dismantled, moved and re-erected. Other reasons were their attractive appearance and low maintenance costs.

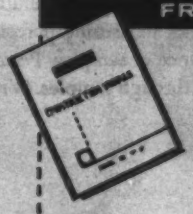
* * *

Besides steel buildings, Armco makes a wide range of other products for engineering and construction. These are produced in more than 50 fabricating plants all over the country. Write for more data. Armco Drainage & Metal Products, Inc., 3068 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

View of a group of the 80-man bunkhouses of Armco Steel Buildings, erected in "H"-shaped structures. Smaller connecting units provide lavatories.

Main office of the contractor. Consists of three Armco Steel Building units, with over-all dimensions of 99 feet wide by 108 feet long. Zinc-coated STEELOX® Panels do not require painting.

ARMCO
STEEL BUILDINGS



FREE BOOK FOR CONTRACTORS

ARMCO DRAINAGE & METAL PRODUCTS, INC.
3068 Curtis Street, Middletown, Ohio

☐ Send me FREE book on Armco Steel Buildings designed for Construction Projects

☐ Have Armco representative call

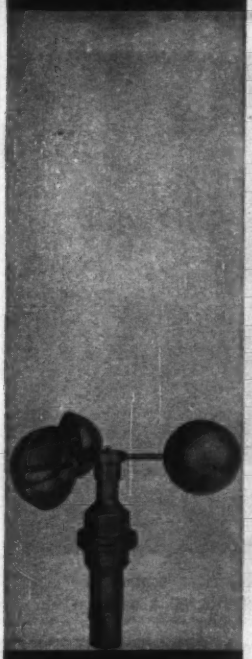
NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

GURLEY

INSTRUMENTS FOR POLLUTION CONTROL

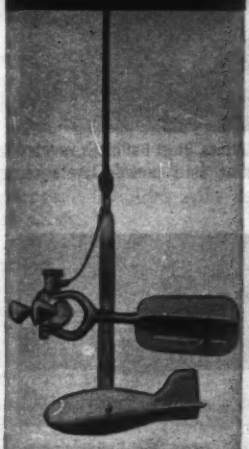


Now—Record Wind Velocity in Any of Three Units

The Gurley Universal Anemometer reads wind velocity—important factor in controlling air contamination—in kilometers per hour; miles per hour; or knots. The three units can be used interchangeably. A simple switch over a calibrator changes the instrument's method of recording from one speed unit to another. The indicator pointer instantly adjusts to the correct reading for the unit selected. The Gurley DC Anemometer is wind-powered...requires no outside power to indicate and record velocity. Accurate within 2% at velocities from about 2 to 100 miles per hour, it is frequently used to control other equipment.

Gurley Anemometers are in wide use at municipal and industrial pollution control laboratories, airports, weather stations, oil refineries, in homes and at shore installations. Other Gurley Wind Instruments for pollution control stations include: Wind Direction Instruments, Wind Velocity and Direction Recorders and Pilot Balloon Theodolites. *Write for Bulletin 6000.*

GURLEY



Current Meters, Water Level Recorders Reveal Water Conditions

The study of flow and level of water are two basic steps in controlling pollution of streams and other waters. The basic flow measuring instrument is the Gurley Current Meter, in use in federal, state and municipal bureaus for 70 years. Gurley Current Meters are available in a variety of outfits for use by overhead-cable suspension...wading-rod suspension...exploration and survey parties. Gurley's "Price Pattern" instruments can be supplied in either fresh or salt water models. There is also the "Pygmy" for shallow streams, flumes and canals.

Gurley Water Level Recorders make continuous graphic records for an entire day or week. Float-operated, simple in construction and operation, they are widely used in reservoirs, sewers, sewage disposal and hydro-electric plants, and supplement irrigation and stream gaging measurements. For details on these and many other Gurley Hydraulic Engineering Instruments, write for *Bulletin 700.*

Other Gurley Instruments to aid you in pollution studies include: Densometers for measuring porosity, air-permeability and air resistance of samples; Permeometers for measuring air flow through samples. *Write for further information.*

GURLEY

. . . Memphis power plant

at the invert. The designers credit the flush-sill installation with substantial savings.

A designed siphon head of 27 ft makes the cooling system economical. Though a total head of 81 ft is required, (44 ft static head and 37 ft frictional losses), no more than 54 ft is to be supplied by the pumps. If the river rises to flood level, water flows by gravity and the pumps are required to make up only the friction head requirement.

Valves to break vacuum were installed along the system at all points of potential water-column separation. When a vacuum occurs, the valves open and admit air into the system. The air cushions the shock of sudden reconvergence. The air is then removed by an air removal system which also gets rid of air that comes out of solution.

The entire pumping station rests on a concrete slab supported by 495 bearing piles. The station is weatherproofed for outdoor operation. Three pumps are sufficient to service the condensers at high river levels. But when the Mississippi flows at its lowest level, all the pumps are needed.

Expansibility has been built in to the cooling water system because the City of Memphis may want to double the capacity of the plant in the future. Each of the two 10 ft dia tunnels from the first to the second manifold is large enough to carry water for the condensers of two of the three generators presently installed. For three more generators, therefore, only one more tunnel will be needed.

The 4,000 ft discharge canal coming from the condensers is also "oversize." It has been built to accommodate the effluent from six condensers without further changes. Engineers felt it would be more economical to invest additional funds in its construction now than to build a duplicate later.

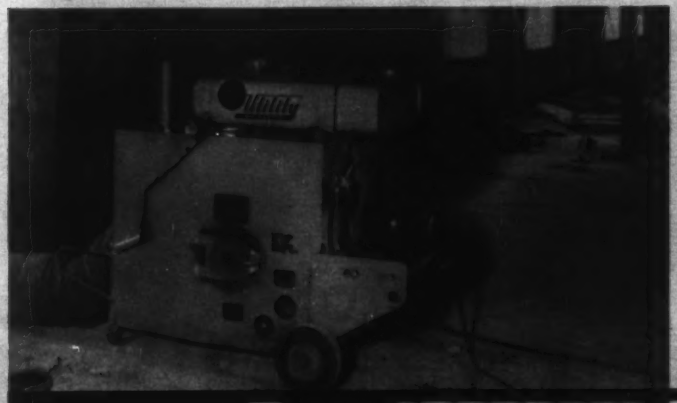
Also in anticipation of expansion, knockout walls and sluice gates have been provided on all manifolds so that uninterrupted operation will be possible.

In addition to the buildings and power facilities, a 24 ft wide access road was constructed to the plant site and about 16,000 lin ft of railroad track was installed to link with the Illinois Central Railroad.

The number of supervisors, engineers and construction workers on the site averages some 2,000 men. A peak crew of 2,500 men is expected before completion.

The mammoth plant was designed by and is being constructed under the supervision of Burns and Roe, Inc., of New York City, industrial architects and engineering consultants. David H. Kregg is project director and William A. Weston is the construction manager.

15 HERMAN NELSON "De Luxe" heaters were used in building a new Yorktown plant addition for Virginia Electric & Power Company. Heaters were operated continuously day and night, in mud, rain and snow. They were used for curing concrete, and to protect valves and piping during construction. Contractor is Stone & Webster Engineering Corporation.



ZERO COLD OUTSIDE, yet comfortably warm inside, thanks to Herman Nelson "Utility" heaters. Project is a new dormitory at William Woods College, built by John Epple Construction Co., Columbia, Mo.

GLASS BLOCK INSTALLATION goes right on in subfreezing cold. A Herman Nelson "De Luxe" directs hot air to the freshly laid blocks. Contractor is Todd-Basehore Co., Cleveland.

count on

HERMAN NELSON

PORTABLE AIR HEATERS

. . . everybody else does!

Get Free Contractors Weather Forecast Service

AMERICAN AIR FILTER COMPANY, INC.
Portable Products Dept. 26 • Louisville 8, Ky.

Rush complete literature on portable heaters. Also send your monthly Weather Forecast Chart, at no cost.

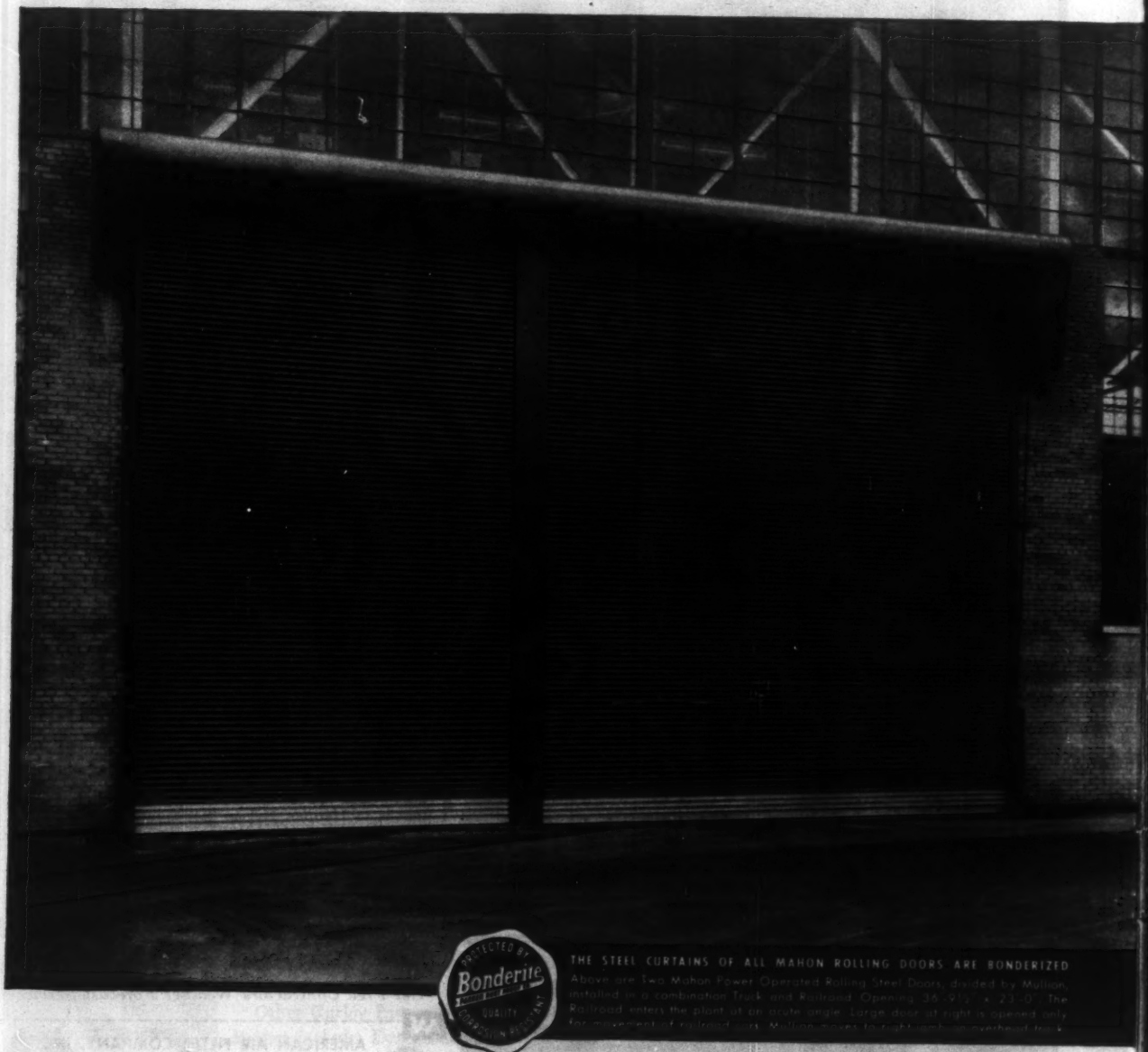
NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE___ STATE_____

Mahon ROLLING DOORS are



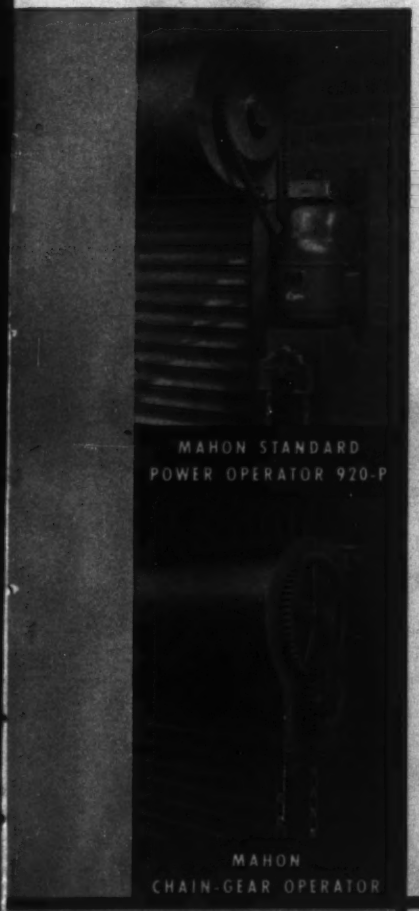
THE STEEL CURTAINS OF ALL MAHON ROLLING DOORS ARE BONDERIZED

Above are two Mahon Power Operated Rolling Steel Doors, divided by Mullion, installed in a combination Truck and Railroad Opening 36'-0" x 23'-0". The Railroad enters the plant at an acute angle. Large door at right is opened only for movement of railroad cars. Mullion closes to right and is overhead track

Serving the Construction Industry Through Fabrication of Structural Steel, Steel Plate Components, and Building Products

Versatile in Application . . . Will Serve You Better in Any Type of Opening!

In Operation, the Fast, Vertical Roll-up Action Saves Valuable Time and Space — No Overhead Tracks to Restrict Headroom



MANUALLY, MECHANICALLY, or POWER OPERATED DOORS
STANDARD or UNDERWRITERS' LABELED

☆ OTHER MAHON BUILDING PRODUCTS and SERVICES:

- Insulated Metal Curtain Walls
- Underwriters' Rated Metalclad Fire Walls
- M-Floors (Electrified Cellular Steel Sub-Floors)
- Long Span M-Decks (Cellular or Open Beam)
- Steel Roof Deck
- Permanent Concrete Floor Forms
- Acoustical and Troffer Forms
- Acoustical Metal Walls and Partitions
- Acoustical Metal Ceilings
- Structural Steel — Fabrication and Erection
- Steel Plate Components — Riveted or Welded

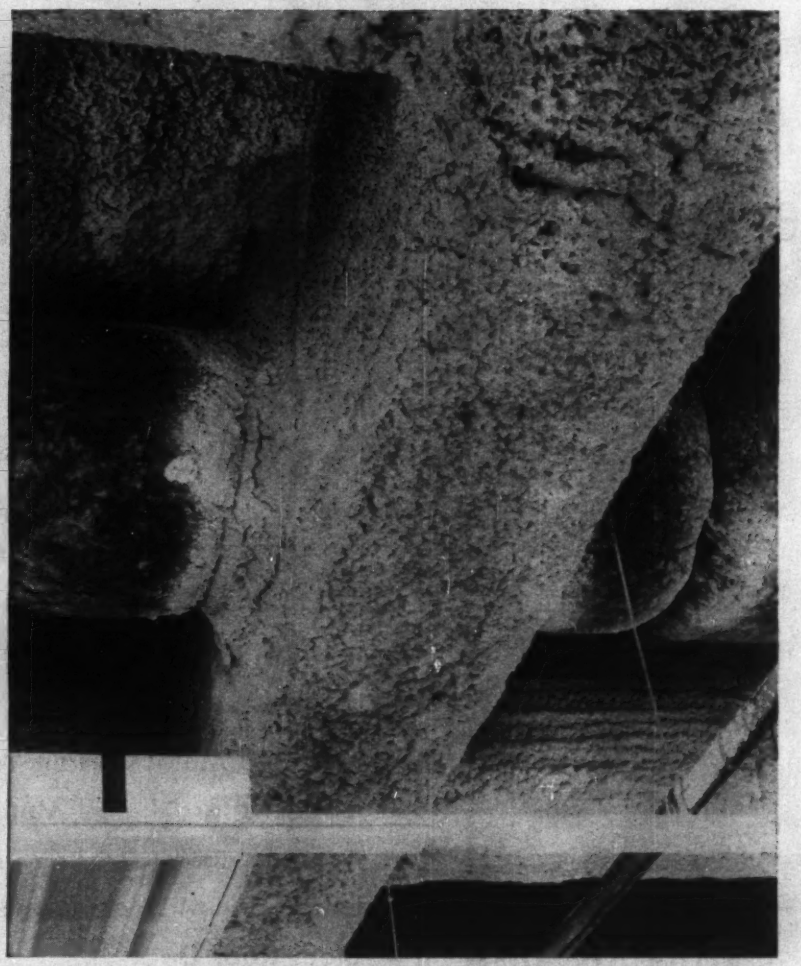
☆ *For INFORMATION See SWEET'S FILES or Write for Catalogues*

THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York and Chicago
Representatives in all Principal Cities

of Steel and Aluminum

MAHON

SPACE SAVERS: Flexible ducts



. . . plus feeder lines that pierce ceiling beams

Air Conditioning Costs Cut 27%

A high-velocity air-conditioning system for the new Texaco Building in Los Angeles was installed for $2.90 per sq ft. Such jobs usually cost about $4.00 per sq ft. The designers say lower cost was achieved without any sacrifice in quality.

Since the system takes up less-than-usual ceiling space, the designer was able to add an extra floor within Los Angeles' 150 ft height limit. The air-conditioning equipment occupies no rentable space.

The 12 story, T shaped Texaco Building contains 200,000 sq ft of floor area. It has a structural steel frame stiffened for earthquake resistance by reinforced concrete end walls and concrete walls around stair wells and elevator shafts.

Column spacing is 28 ft throughout. Both the stem and the top of the T are two bays wide and five bays long.

Office areas, planned for maximum flexibility, feature movable partitions and an under-floor duct system for wiring. Most areas have suspended, demountable acoustical ceilings with recessed fluorescent lighting. Some areas have luminous ceilings. Clip-in channels support the accoustical tile, lighting fixtures, air-conditioning diffusers and return registers. Lighting and air-conditioning fixtures are not attached to the ceiling suspension system and they are, therefore, easy to move. Diffusers are connected to the high-velocity boxes by flexible duct.

For the initial installation, four diffusers are provided for each 28 ft square bay. Return registers are arranged on 7 ft centers near the continuous windows. Designers say they will pick up any heat that may still come through the extensive glass areas, which have been engineered for sun control.

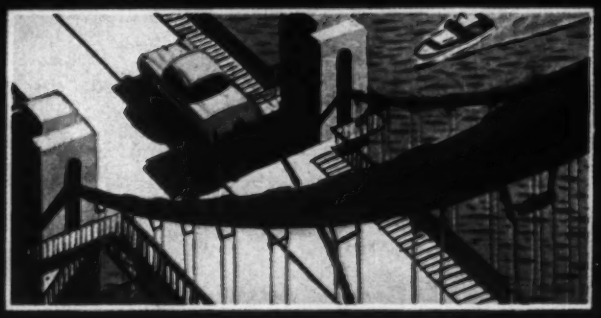
• **Double-duct system**—The system has double-ducts: both cool and warm air are carried at high velocity to each floor in separate ducts. It is designed to maintain 75 F and 50% relative humidity when the outside temperature is 90 F dry bulb and 70 F wet bulb.

Fan rooms are located on the roof and in the basement. They provide a total air supply of 172,000 cfm. The supply fans have backward-inclined blades capable of delivering required quantity with minimum power. Air is fed up from the basement and down from the roof to achieve maximum duct-shaft economy. The roof fan supplies air to the upper six floors and the basement fan to the lower six.

Two compressors, with a total capacity of 650 tons of refrigeration, provide chilled water. The compressors are located in the basement; chilled water is pumped to cooling coils at both the basement and roof-top supply

(*Continued on page 51*)

Name your own tint



Never before weather-resisting tinted *finishes* that are also rust inhibitive . . .

Now you can give steel structures distinctive color . . . or decorative color . . . along with greater durability than ever

Maroon

Gray

Buff

Name your own tint

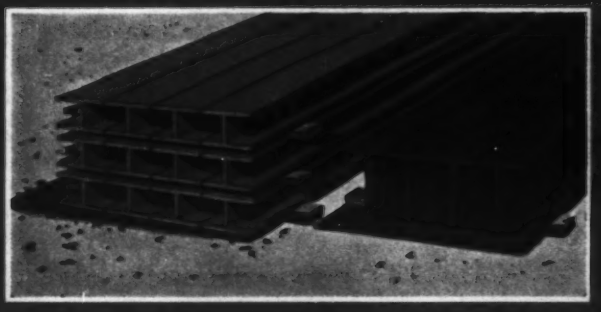
Never before tinted *intermediates* that are *both* weather resistant and rust inhibitive . . .

Now you can specify intermediate colors in sharp contrast and aid visual inspection for "holidays"

Orange

Maroon

Name your own tint



Never before anti-corrosive *primers* that are also tintable and weather resistant.

Now you can eliminate on-the-job mix-ups by using structurals shop-primed in *coded* M50 pigment colors

Proof M50 pigment Defense in Depth paints deliver color opportunities entirely beyond those of ordinary anti-corrosive paints

Wide color choice has never before been available in *all* coats of anti-corrosive specification paint systems. Now *M50* basic lead silico chromate pigment* gives you an entirely new color specification freedom . . . in primers as well as intermediates and finishes . . . along with all-coat rust inhibition, all-coat weather resistance. Some of the opportunities this presents are suggested above. You'll think of others.

M50 Defense in Depth

. . . And never before such *durable* color. See next page for proof . . .

➡ ➡ ➡

*Registered trademark of

National Lead Company

General Offices: 111 Broadway, New York 6, N. Y.

For more facts, turn page

A. No visible discoloration from atmospheric conditions

Contrast areas marked **A** in photo (top at right) of paint test panels exposed 18 months. You can see *M50* pigment paint is free of discoloration caused by atmospheric conditions.

B. No objectionable whitening from normal chalking

Now compare areas marked **B**. Notice the brightness of color in the *M50* pigment paint. A finger drawn across this paint shows no mark from rubbed off chalk.

C. No noticeable leaching from water action

Look closely at areas marked **C**. Can you see where the non-*M50* paint has been leached by rain water to expose vertical brushmarks in the undercoat? Insoluble *M50* pigment prevents this film failure.

D. No excessive fading from light action

This time examine the close-up (bottom photo at right) of a 9-year *M50* pigment primer exposure test. Contrast between the area shaded by a wooden panel holder and the non-shaded area shows excellent tint retention conferred by *M50* pigment.

M50 pigment paint tints stay brighter, retain hue longer ... they're protected against all 4 causes of color loss

No need to amplify what the illustrations on this and the preceding page show. Plainly, *M50** pigment Defense in Depth paints give you more color freedom, more color durability than ever before available in metal protection paints. More rust inhibition, more weather resistance, too. In every coat!

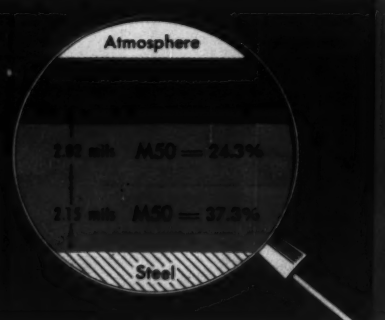
Where to get *M50* pigment Defense in Depth paints

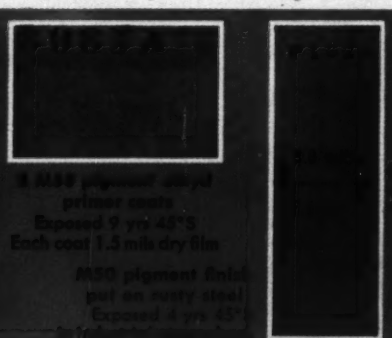
National Lead makes the pigment, not the paints. So the place to go for *M50* pigment specification paints themselves is your regular supplier. However, National Lead can help you familiarize yourself with these new paints in four ways: (1) show you *M50* pigment paint exposure test panels at its Sayville, L. I. Test Station; (2) send you a 24-page descriptive brochure, "Defense in Depth." (Mail coupon below); (3) provide technical aid in test applications; (4) help you develop suitable specifications for paints containing *M50* pigment.

For M50 pigment paints themselves, contact your regular suppliers.

*National Lead Company trademark for a basic lead silico chromate pigment

Why M50 Defense in Depth paints give you metal protection beyond all former concepts





In every coat...rust inhibition! Fused lead chromate is noted for rust-inhibition. The *M50* pigment particle structure permits paint makers to include large proportions of lead chromate in all coats of anti-corrosive systems.

In every coat . . . weather resistance! *M50* pigment is insoluble in water and has the excellent tint retention properties of fused lead chromate. Unlike other rust inhibitors, it actually boosts weather resistance of paints.

In every coat...your choice of colors! *M50* pigment gets along well with most tinting pigments, permits paint makers a wide range of colors...not only in intermediates and finishes but in primer coats as well. Colors stay true.

M50 Defense in Depth

National Lead Company,
111 Broadway, New York 6, N. Y.

Gentlemen: Please send me your 24-page brochure, "Defense in Depth." Include color card of the six *M50* pigment paints you recommend for steel highway structures.

Name_____ Title_____

Firm or Dept_____

Address_____

City_____ State_____

LOTS OF GLASS on exterior of Texaco building puts big load on air conditioning.

fans. The fan system is designed to use 100% outdoor air when possible. This minimizes use of refrigeration and boiler equipment.

Vertical air-supply ducts vary from 70 x 50 in. at basement and roof levels to 16 x 50 in. at the sixth and seventh floor. Pipes taking off from the vertical runs vary range 15 down to 10 in.

The double-duct system supplies hot and cold air to air mixers on each floor. Each mixer is thermostatically controlled a zone generally 28 ft square.

Return air is carried from return-air registers through the space above the hung ceiling. It enters a high-velocity return duct through air valves; velocity downstream of the valve is 2,400 fpm. The air valve is designed to eliminate noise from the high-velocity system.

Several other features of the system are also aimed at noise reduction:

- Pumps, fans and other rotating equipment are installed on spring-supported inertia blocks to keep the vibrations from being transmitted to the building structure.
- Sound absorbers are installed in the fan outlets to reduce audible fan noise. These units require one-third less space than conventional sound absorbers and provide better sound treatment.
- Fan plenums are lined with acoustical material.
- Noise-proof, pressure-reducing outlet valves and return-air valves are used.

The Texaco Building, including air-conditioning features, was designed by Welton Becket & Associates, architects-engineers, Los Angeles. General contractor was the Del E. Webb Construction Co. Air-conditioning subcontractor was Western Air Refrigeration.

Powerful Waukesha Utility Four—Model 180-DLCU Diesel—four cylinder, 3½-in. bore x 3¾-in. stroke, 144 cu. in. displacement, counterbalanced crankshaft.

REICH *drills* either way ROTARY or DOWN-THE-HOLE with

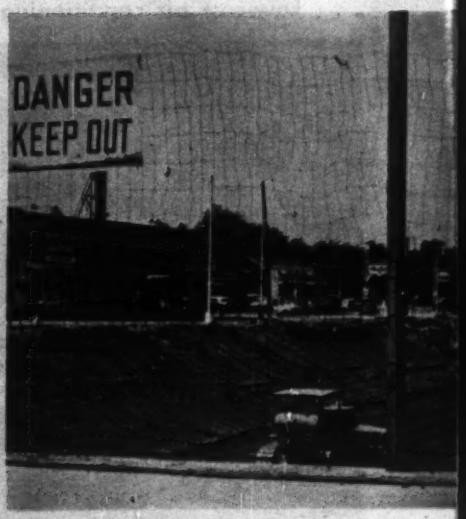
WAUKESHA *Diesel* POWER

The *small* rig that's designed for down-the-hole tool drilling of holes up to 6½-in. diam. in hard rock—the Waukesha Diesel-powered, Model C-250 Reich Drill is said to be the only machine of its kind in the world. It does the work of small hard rock rigs that drill with drifters; and large hard rock machines that drill with down-the-hole tools. But the Reich is only half the size... and half the cost...of large machines. The makers, Reich Bros. Mfg. Co., Terre Haute, Ind., gave the drill an equally versatile power unit. The Waukesha 180-DLCU has special Diesel design characteristics including the patented spherical combustion chamber which gives lively responsive acceleration, smoothness of operation, and clean burning with high economies both of maintenance and fuel. Get the details of Waukesha dependability in Bulletin 1627.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES 399

RECENTLY COMPLETED stretch of Long Island's six-lane limited-access expressway.

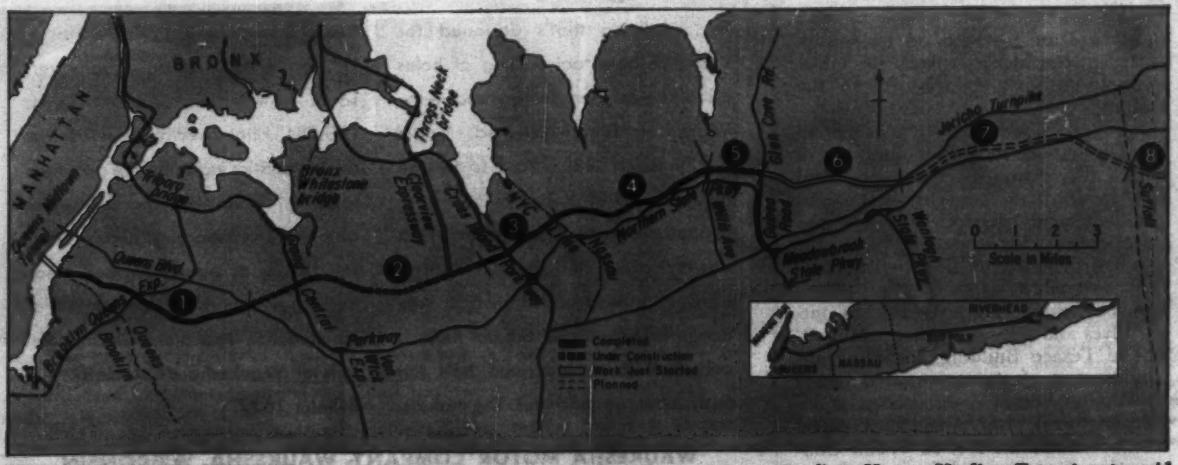


OVERPASSES AND ROADBASE are going

The Worst Is . . . On the

Last parts of the most difficult and tedious stretch of New York's Long Island Expressway have reached the point where road seems to take shape overnight. Just recently the five mile section from the New York City line into Nassau County was put into operation.

Pushing a six-lane highway through heavily built-up areas calls for major, time-consuming efforts in demolishing and clearing, utility relocation and building facilities to maintain traffic during construction (ENR Sept. 26, 1957, p. 50). But these are now mostly out of the way. Roadbase, pavement,



LONG ISLAND EXPRESSWAY is over-all name for Horace Harding Expressway to city line, Horace Harding Extension to mid-Nassau County, Long Island Thruway to Riverhead. At right is progress report for the numbered sections.

in along some sections.

PAVEMENT is going down to complete other stretches.

Almost Over . . .

overpasses and underpasses are going in along the route.

By summer of next year, 18 miles of the 81 mile artery to the eastern end of Long Island will be in traffic-carrying shape. Traffic will be able to go from the Queens Midtown Tunnel—the East River crossing to Manhattan Island—through New York City's Borough of Queens and into about the middle of Nassau County.

Although finishing touches still will be necessary, by next summer all pavement and structures of the limited-access divided highway will be open to traffic—except for a short stretch for the future Clearview Interchange. Finish-up work will be tackled with traffic on the road. This includes wingwalls for the many overpasses, slope finishing and all other details that do not interfere with traffic flow.

Some segments of a 6.6 mile Queens section still under construction may be opened even sooner. In this traffic-heavy area every bit of new road is welcome. So roadbuilders ramp traffic onto and off the expressway as soon as the pavement will allow.

What makes such ramping practicable and smooth are three-lane service roads on each side of the expressway. Prac-

GRANITE makes attractive shoulders.

Long Island Expressway

① — The 4.5 miles of the Long Island Expressway from the tunnel to the Queens Boulevard crossing was built by the Tri-Boro Bridge and Tunnel Authority. Stretch from the tunnel plaza to where another modern highway—the Brooklyn-Queens Expressway—crosses was opened to traffic in 1940-41, at a land and construction cost of $51.5 million. The remainder was opened in 1955, at a cost of $22.7 million.

② — Now under construction and scheduled to take traffic no later than June, 1959, are 6.6 miles of road from the Queens Boulevard to Cross Island Parkway. Traffic may be ramped onto the first few miles of this section even sooner, perhaps by December of this year.

Along this stretch, the expressway is in varying degrees of completion. Overpasses for local traffic are being pushed, roadbase is being compacted and in some parts pavement is being laid. One part that is not yet being worked is a 1.6 mile segment that will provide for the Clearview Expressway Interchange. The Clearview Expressway will connect the Long Island Expressway with Throgs Neck Bridge.

Land and construction cost for this section of the expressway runs to $46.5 million, including a $2.8 million bridge over Queens Boulevard. Contractors along the 6.6 miles are Tully & DiNapoli, Klevens Corp., Slattery Contracting Co., Hendrickson Bros. and Gull Contracting Co.

③ — A completed 1.5 mile section takes the expressway across the Cross Island Parkway to the New York City-Nassau County line. Construction cost of this vital length, opened last year, was $4.3 million.

④ — Ceremonies on September 30 put into operation the newest length of the expressway—3.1 miles from the city line to Willis Ave., Roslyn Heights, Nassau. Cost was $9.3 million for land and construction.

⑤ — Another stretch under construction goes from Willis Ave. to Guinea Woods Road. The 1.4 mile project includes a connection to Northern State Parkway. Completion is scheduled for summer of 1959. Tuckahoe-Davis holds a $4.8 million contract. Over-all cost is $7 million.

⑥ — Some $12 million in contracts were just let to take the expressway 2.9 miles to the Jericho Turnpike, midway through Nassau. Land and construction cost is $14.6 million; tentative completion is May, 1960.

⑦ — Another 6 miles of road will bring the expressway to the Nassau Suffolk line. Route and design are completed and cost is estimated at $23 million for land and construction. Construction on this final Nassau strip is scheduled to begin in 1959.

⑧ — The route for the remaining 41 miles through Suffolk County to Riverhead has been selected and is currently on the drawing boards. Estimated cost for this last section of the expressway is approximately $80 million. Actual construction dates will depend on fund allocations.

For those SPECIAL SURFACING JOBS...

WALK-TOP

FOR SMOOTH, RESILIENT PLAYGROUNDS

Modern design specifications for schoolyards and other play areas call for surfacing that is smooth, non-abrasive and resilient; yet tough and highly resistant to wear and weather. Walk-Top®, a special factory-compounded asphalt emulsion, meets all these requirements. In Los Angeles, alone, more than 5 million sq. ft. of playgrounds have been surfaced with Walk-Top!

LAYKOLD

FOR THE FINEST IN ALL-WEATHER TENNIS COURTS

Laykold® tennis courts provide year-around, maintenance-free playability. More than 10,000 Laykold courts are now in play throughout the world. These true-plane, resilient courts are available in black, red or green; or in the new "two-tone" combinations of colors. Laykold courts were recently selected for installation at Forest Hills, as shown above.

PLAY YARDS AND TENNIS COURTS are only two examples of *special jobs* that require not only *special materials* but also *special construction methods.*

In developing Walk-Top and Laykold, (plus a broad line of other asphalt specialties) we have also pioneered and developed specifications covering proper construction and application practices. These "specs" are available without charge to architects, engineers, contractors or to anyone concerned with special surfacing jobs.

Call our nearest office for full information.

American Bitumuls & Asphalt Company

320 MARKET, SAN FRANCISCO 20, CALIF.
Perth Amboy, N. J.
Baltimore 3, Md.
Cincinnati 38, Ohio
Atlanta 8, Ga.
Mobile, Ala.
St. Louis 17, Mo.
Tucson, Ariz.
Portland 8, Ore.
Oakland 1, Calif.
Inglewood, Calif.
San Juan 23, P. R.

. . . Finish still a question

tically first-grade highways in themselves, the blacktops are a must, put down to maintain traffic before work on sections of the expressway is started. They will be kept to serve later as marginal roads.

The service road is now far enough along so that cars can go from the East River tunnel to the middle of Nassau by alternating between stretches of finished expressway and the service roads.

• **When to the end?**—The completed sections, those under construction and a length recently let will bring the expressway to mid-Nassau.

It will take another 6.3 miles of road at an estimated cost of $23 million to push the expressway to the Suffolk County line. Then through Suffolk to Riverhead, the terminal point, 42.7 miles will cost an estimated $80 million.

But when construction is to begin on these remaining miles is still a question. While route location has been completed, allocation of construction moneys remains the determining factor in purchasing right-of-way and beginning actual construction.

Parts of the new Queens section of the expressway are being built for the Interstate Highway System and are therefore eligible for 90% federal aid. That is not the case east of the Clearview Expressway—a future connection to Throggs Neck Bridge. That section of road goes under the ABC system, which calls for a greater state cost contribution—50%.

• **Granite block shoulders**—One unusual touch along a portion of the expressway is granite blocks for shoulders and center mall, replacing the more conventional concrete or blacktop.

Primary reasons for this are appearance and stability. Contrast between the curbed granite-block texture and the dark carbon-treated portland cement concrete road is pleasing.

There is also a possible attendant benefit. The stones are widely spaced on a compacted earth base. In some stretches, the spaces between blocks are filled with soil and planted with grass. In others the spaces will be filled with mortar. This results in an uncomfortable walking surface that should discourage dangerous strolling along the shoulders and mall.

The granite blocks used were salvaged from New York City streets that have been resurfaced with more modern materials.

The stretch of the expressway now being constructed is under the direction of John W. Johnson, New York State Superintendent of Public works and Milton E. Goul, district engineer, Long Island District.

Boost production figures...

with Le Roi's new shock-absorbing breakers

The handle floats on rubber in Le Roi's new LB75 and LB92 paving breakers! As a result, they really shatter concrete — barely shimmy the operator. That means less fatigue — greater comfort — much higher man/day production. Now, total power can be applied to concrete breaking.

Other features help make these tools an operator's dream. Rubber handles make 'em cool tools to the touch . . . exhaust air blows *away* from the man . . . swivel air connection eases maneuvering . . . lightning-quick latch-type retainers speed steel changes.

Happy operators will want these — production-wise contractors will see that they get 'em. At your local Le Roi distributor *now*. Or write directly to Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wisconsin.

LE ROI NEWMATIC® AIR TOOLS

AT-3005

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

For simplicity of design and availability you can count on USS Structural Steel

It is generally accepted that the best design is the *simplest* design. This is especially true in bridges.

A clean, simple structure indicates that the designer refused to use one extra pound of material. He had a clear understanding of fabrication problems, so he carefully eliminated excess joints. He knew that *men* had to do the erection, so he selected familiar, easy-to-work-with materials.

For these reasons, most designers prefer to work with steel.

Steel is the most versatile of all building materials. It can be punched, sheared, hot-worked, welded, flame-cut, riveted or bolted. Members can be fabricated in the shop and erected in practically any kind of weather. It is unsurpassed for strength and impact resistance, and is available in a great range of shapes, sizes and strengths.

Long before the Interstate Highways Program was suggested, the steel industry saw the growing need for structural shapes and plates. New facilities were planned, and today they are steadily coming into production. Bridges that are on the drawing board today can count on these new facilities. Now, more than ever before, you can design with the material you know best, the material that offers the most—*you can count on steel.*

USS TRADEMARK

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Steel Service Centers
United States Steel Export Company

United States Steel

KEEP OUR ROADS ON THE GO

"Every now and then I miss a good one!"

In the new construction market, DODGE REPORTS can uncover them for you

Have you ever figured the cost—in salesmen's time and missed opportunities—of blind sales calls and calls based on rumors? In some fields, it's the only way of getting business. But not in the new construction market! Not when you can use *Dodge Reports* to pinpoint *active* prospects... to guide the timing of sales calls... to help you concentrate on the jobs you *know* will be profitable.

Dodge Reports tell in advance who is going to build what and where, tell you who to see, when bids are wanted—even who else is bidding and who finally gets the job. You specify the area, types of jobs, and stages of progress you want to cover. Reports are mailed daily direct to you or your salesmen. *Dodge Reports* will cover all types of construction for you anywhere in the 37 Eastern States.

WRITE FOR FREE BOOK

F. W. Dodge Corporation, Construction News Division,
119 West 40th Street, New York 18, N. Y., Dept. 10118

Send me the book "Dodge Reports—How To Use Them Effectively" and let me see some typical Dodge Reports for my area. I am interested in the general markets checked below.

☐ House Construction ☐ General Building
☐ Engineering Projects (Heavy Construction)

Area_____

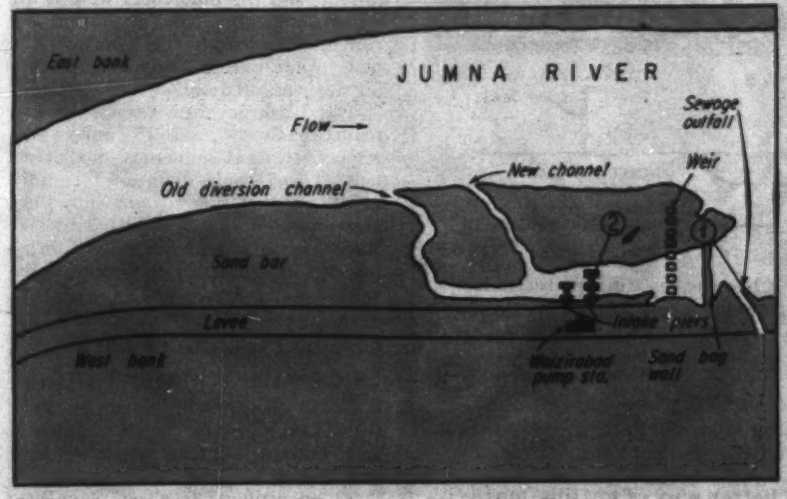
Name_____

Company_____

Address_____

City_____ Zone____ State_____

NEW DIVERSION CHANNEL is dug to restore a flow of Jumna water to the supply pumps. Pump station was left high and dry when river shifted its course.



OUTFALL (1) dumps untreated sewage only 700 ft from Delhi's water supply pump station intakes (2). Backwash from the sewer is a constant health hazard.

Errant River Plagues New Delhi

A new committee of the Indian government is trying to come up with remedial measures for New Delhi's recurrent water troubles. The critical water shortage that threatened the capital's 1½ million inhabitants in late summer has been alleviated. But an old pollution problem still remains, plus the question of what to do about the Jumna River on a permanent basis.

Five thousand soldiers got water back to the city again. With little more than their bare hands, they dug a new channel from the city's Wazirabad water-supply pumping station to the Jumna, which had shifted course in the wake of receding monsoon floods and left the pumping station high and dry.

The big hazard to the water supply now is a sewage outfall located only 700 ft downstream from the pumping station. Backwash from this main drain polluted Delhi's drinking water in 1955 and caused an epidemic of jaundice. At that time the Indian Government had a sandbag barrier constructed across the danger area but this has been found inadequate.

Fighting the endless shifting of this erratic river is not new for India's Central Water & Power Commission. Its technicians have been battling the problem for a decade.

In the most recent incident, the Jumna's main stream shifted eastward, leaving the intakes on the west bank about 2,000 ft from the waterline. The diversion channel that supplied the pumps was plugged with silt. It is the opinion of some experts that a $500,000 levee built in 1955 may have been responsible for forming a sand bar and for deflecting the river from the water works.

Almost immediately after the shortage, New Delhi engineers started the construction of a 1,100 ft long $1.5 million weir to keep the main drain sewage from flowing into the water supply pumping zone.

The partly completed weir was soon ordered torn down and a $3 million dam was proposed to take its place. The dam would insure pollution-free drinking water, it is said, and in addition it would store a foot of water over 2,000 acres to be utilized during the water-short months—April, May, June and July. During these months, flow normally drops as low as 100 cu ft per sec.

Envisioned also is an extension of the outfall so that untreated sewage will be discharged 3,000 ft from the pumping station.

Two sewage treatment plants were recently completed near the weir site at a cost of $2.5 million, but they are idle because no trunk sewer has been constructed to feed the sewage to the plants.

Hawaiian Dredging Gets U. S. Navy Commendation

Hawaiian Dredging & Construction Co., Ltd., received a Navy Bureau of Yards & Docks commendation this month for its performance in the rehabilitation and expansion of Naval facilities on Midway Island.

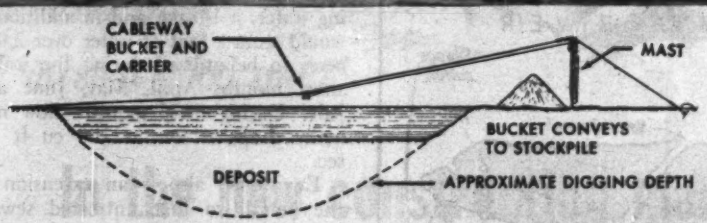
The work involved construction projects totalling $40 million. In addition to channel and harbor deepening, sea wall, pier and runway work, the company built one of the worlds largest hangars for the enlarged Naval Air Facility at the island.

Originally a $15 million contract, additional items requested by the Navy increased the size of the job to the $40 million mark.

(International continued on page 60)

The Best Method for Digging Under Water is a Sauerman Slackline Cableway

...R. W. Bisett, Pres., Olean Gravel, Inc.



A Sauerman Slackline Cableway has been excavating material for Olean Gravel, Inc. since 1930. The 1½-yd. bucket has an operating span of 1200 ft., with an average haul of 900 ft. Depth of the pit is approximately 85 ft.

Due to the long haul and digging depth, Olean uses shovels at the shore line to supplement the Slackline and maintain the 200-tph. capacity of their new plant. Mr. R. W. Bisett, President, states:

"No one has yet come up with a better way of getting material from below the water line than Sauerman."

During freezing winter months when the plant is not operating, the Slackline Cableway is kept running to build a stockpile of material. A 110-ft. mast permits building the pile to a height of about 75 ft. All digging, elevating, conveying and dumping operations are handled by the hoist operator. Gravity return of the bucket to the excavation completes the fast operating cycle.

Where long range excavation or deep digging is required, it pays to use a Slackline Cableway. Contact Sauerman for specific recommendations on your job. Catalog C, *Slackline Cableways*, gives more information on this materials handling method.

SAUERMAN BROS., INC. 632 SO. 28th AVE. BELLWOOD, ILL.
Linden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Trailline Cableways • Dragline Buckets

Iraq Awards Contract For Large Drainage Scheme

What is apparently the first large development contract awarded by the new government of Iraq has been announced.

Amounting to approximately $3 million, the contract covers the drainage scheme known as the Shattrah Project in the southern part of the country near Nasiriya.

The successful bidder was the Dutch firm of Zanen Verstoep N. V., with which Gahagan Dredging Co., New York, is associated on a technical assistance basis. The same two firms are just winding up construction of Iraq's Hilla Canal farther north.

Engineers on the Shattrah Project are Tippetts-Abbett-McCarthy-Stratton of New York City, who prepared original plans in 1952. These were updated two years ago for early construction.

The old Development Board asked for bids last February. The low bidder took exception to some of the specifications, and the differences were being ironed out when the revolution occurred. By awarding the contract, the new regime puts its stamp of approval on these negotiations.

The work involves excavating two main canals—40 and 15 miles long respectively—and numerous smaller canals. These would drain a large, cultivated, but waterlogged area into Lake Hammer. The job is expected to take three years. Tippetts-Abbett-McCarthy-Stratton is scheduled to supervise the work.

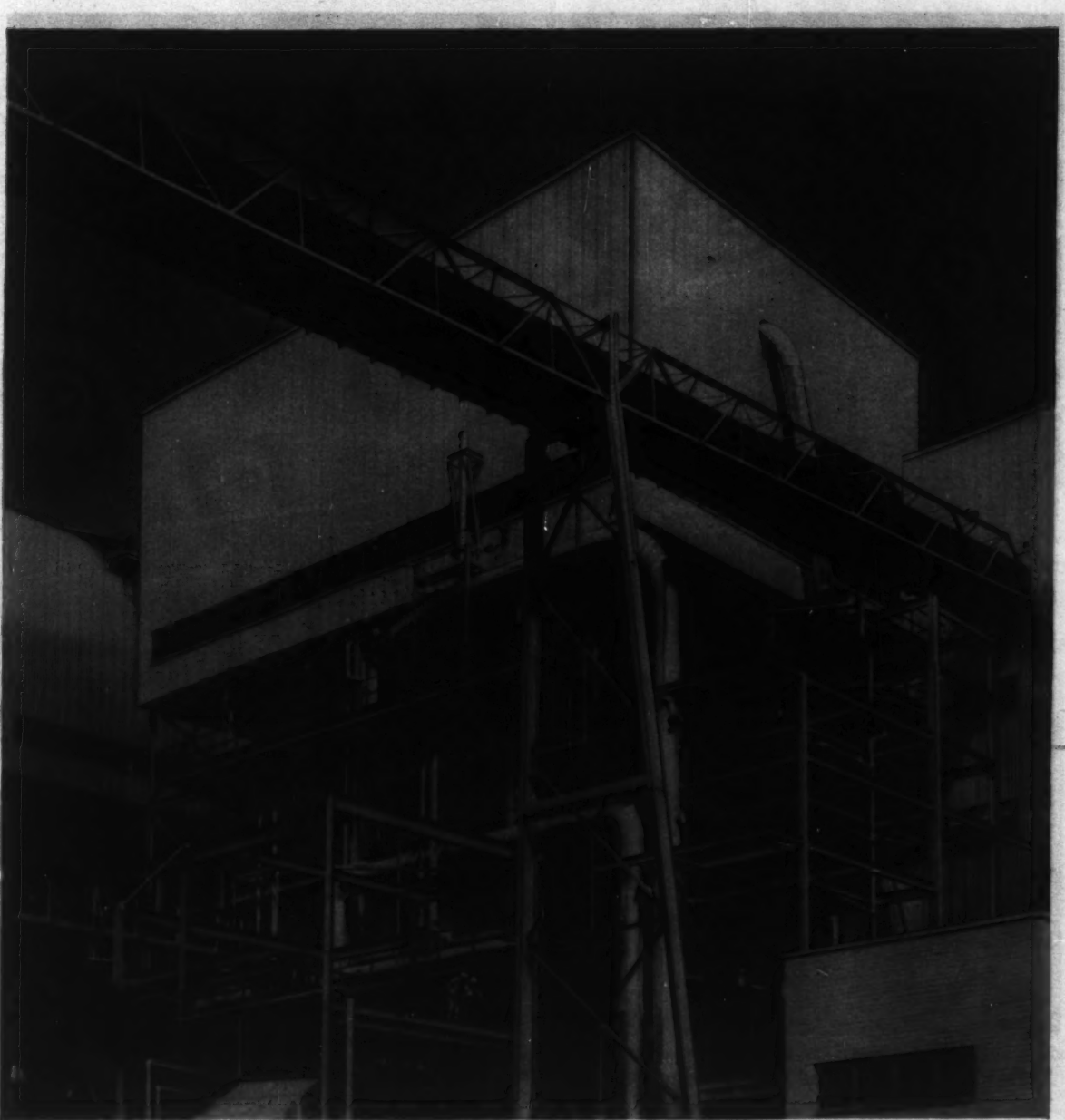
Czechs Float Steel Tanks Into Underground Position

Czech engineers are using buoyancy instead of cranes to place underground steel tanks. And they are saving time and money with the new method.

At an artificial fertilizer plant near Lovosice, a 50 ton high-pressure tank, 55 ft long and 10 ft in diameter, was rolled into a water-filled concrete pit. Then it was easily positioned over its supports as the water was pumped out. The method made it possible to do the work without the cranes normally needed for this type of job.

After the pit was filled with water, the tank was positioned along one side and held with steel cables attached to a tractor. The tank was then allowed to roll into the pit. Rubber cushions protected the tank and the upper edges of the pit from damage.

This method was faster than the old one and avoided, besides the cranes, the wood and metal cribbing ordinarily used for the operation.



Power Company buys aluminum's long-range economy

No maintenance or painting makes Robertson Q-Panels choice for West Penn Power's Armstrong Station

West Penn Power used Alcoa® Aluminum extensively throughout its new Armstrong Station. Because, with aluminum, *first costs are last costs.* There's no costly painting or maintenance . . . no need to worry about corrosion damage. Aluminum stays on the job year after year, defying fumes, grit and the worst kinds of weather.

Robertson-Q-Panels, prefabricated and ready for on-site erection, were West Penn's choice. Dry construction and light weight sped erection and permitted earlier occupancy. Framing and foundation requirements were reduced.

Industrial skylines all over America are sprouting better buildings at lower cost because of Alcoa's pioneering achievements in aluminum. Call your nearest Alcoa sales office for complete data and technical help. Or write Aluminum Company of America, 860-L Alcoa Building, Pittsburgh 19, Pa.

Building: Armstrong Station, West Penn Power Company
Consulting Engineer and General Contractor: Sanderson & Porter, New York, N. Y.
Panel Fabricator and Erector: H. H. Robertson Company, Pittsburgh, Pa.

ALCOA THEATRE, Fine Entertainment, Alternate Monday Evenings

ALCOA ALUMINUM

Your Guide to the Best in Aluminum Value

"Nothing cuts driver training costs like Torqmatic Drive"

Talk to any hard-boiled construction boss with TORQMATIC DRIVE experience and he'll tell you this modern drive for modern equipment is the real answer to driver-training problems.

The reason is clear—TORQMATIC DRIVES use oil to transmit power. And the oil takes all the beating a new hand usually gives a piece of equipment when he makes a shifting mistake.

So it's practically impossible for a greenhorn to burn out clutches, strip gears, snap drive lines, break axles or lug engines—the kind of equipment damage that can cost as much as $2,000 for every driver trained.

When you add the savings you'll make on TORQMATIC driver training to the extra profits you'll make from greater availability, faster round trips, bigger payloads, better tire life and far lower maintenance costs, you'll quickly see there's nothing like TORQMATIC DRIVE to make contracts more profitable.

You can get TORQMATIC DRIVES in construction equipment to handle every job from first cut to final paving. Find out what's in it for you by looking into TORQMATIC DRIVE before you buy. See your equipment dealer or write:

Allison Division of General Motors, Indianapolis 6, Indiana

Allison TORQMATIC

TORQMATIC® DRIVES

THE MODERN DRIVE FOR MODERN EQUIPMENT

Rehabilitated Brooklyn Army pier has fendering system whose . . .

Corner Caps Compress Under Impact

When Leonard S. Wegman Co., New York City engineering firm, was given the job of completely rehabilitating five U.S. Army piers on the Brooklyn waterfront, it came up with a fendering system that features extra heavy and strong corner caps.

Ships tying up at the busy piers are subject to rather strong tidal currents. This calls for corners that can hold up under repeated punishment as the ships are "bent" into their berths.

The corner cap is a cluster of rows of wood piles alternated with heavy horizontally placed timbers. As the ship is warped around the corner, the vessel compresses the cap, which absorbs a large amount of the energy before transmitting the impact to the bearing piles.

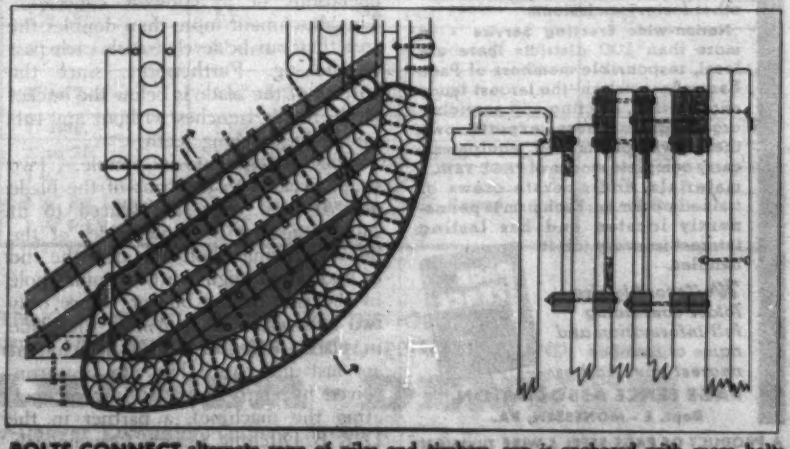
A typical corner shows up as follows:

A 12 x 12 in. timber is run along the truncated pier corner and anchored by 1¼ in. bolts into the reinforced concrete pier deck. Eight 50 ft long, 12 in. dia, yellow pine piles are spaced along the length of the timber and driven into the harbor bottom. Their top ends are fastened to the timber with 1 in. bolts.

Next, the bottom one of three lengths of timbers, bolted one atop the other, is bolted to the row of piles so that the top two lengths project above the piles. A second row of eight piles is driven and bolted to the just-placed timbers. The timber step is repeated and followed by a third row of seven piles. Bolted to this row of piles are two sets, placed side by side, of the three-member timber lengths.

All timber ends are cut on the diagonal, and the last timber is shaped,

PILE AND TIMBER cluster compresses under ship impact, absorbing a big share of the energy before it passes on to bearing piles.



BOLTS CONNECT alternate rows of piles and timbers, cap is anchored with more bolts into reinforced concrete pier deck.

To Best Meet Fencing Needs

PAGE FENCE

offers the Widest Choice

You can choose from

—8 Fence Styles
—8 Fence Heights
—4 Fabric Metals
—2 Types Metal Posts
—Top Rail or Top Wire
—Single or Double Extension Arms
—6 Gate Styles, Many Widths

• PAGE provides a wider choice of long lasting fence fabric metals. Each has characteristics which meet individual preferences or make it more suitable to meet certain climatic or service conditions.

Galvanized Steel • Woven of time-proved open-hearth steel wire, hot-dipped galvanized after weaving to assure long service.

Aluminized Steel • By a PAGE patented process a coating of commercially pure aluminum is bonded to steel wire to provide longer corrosion resistance, yet its cost is comparable with fence fabric having shorter life expectancy.

Aluminum • Another metal in non-corrosive class. It will not rust, will not discolor materially under unfavorable conditions. Semi-flat weaving gives it exceptional strength.

Stainless Steel • This chrome-nickel fabric is immune to practically all corrosive elements. Advantageous near salt water and where air is laden with smoke, sulphur and other factory emissions.

Nation-wide Erecting Service • In more than 100 districts there are local, responsible members of Page Fence Association—the largest fence engineering, erecting and servicing organization. These experts own their own plants and equipment, carry complete stocks of PAGE FENCE materials, and operate crews of trained workmen. Each firm is permanently located and has lasting interest in every job it handles.

Write for file-size folder containing full information and name of member nearest you. Address—

PAGE FENCE ASSOCIATION
Dept. E • MONESSEN, PA.

A PRODUCT OF PAGE STEEL & WIRE DIVISION AMERICAN CHAIN & CABLE COMPANY, INC.

REPLACEMENT of outer-end bearing piles can be made without disturbing concrete deck through use of timber pile clamps and deck anchor bolts.

so that rounded corners are formed.

Now come 41 Greenheart fender piles arranged and driven in a tight two-row arc. These are bolted to each other and to the previous timbers. Five turns of 1 in. wire rope are then wrapped around the end of the cluster.

At the mean low water mark, the pile rows are separated and connected by one-timber-high lengths of the 12 x 12's. Each pile row is further braced with pairs of diagonally placed timbers.

Transferring the energy, over that absorbed by the corner cap, to the outer-end bearing piles is accomplished by a unique moment transfer method between the concrete deck and the bearing piles. The method permits pile replacement and full moment utilization without disturbing the concrete deck.

The piles are bolted to pile clamps made of 6 x 12 in. timbers, one to each side of the pile row. One-inch bolts reinforced with spiked grid connectors transfer the necessary shear. The clamps in turn are anchored to the concrete deck with ¾ in. bolts and 2 in. washers. To replace any pile, the clamps are loosened from their anchor bolts and the pile removed by disconnecting the bolts between clamp and pile.

In service for over two years, the pier corner cap system has performed excellently.

Partner Herbert Mandelbaum was in charge for Wegman. Spearin, Preston & Burrows, New York City, was the contractor. Piers are under the New York District Office, Corps of Engineers.

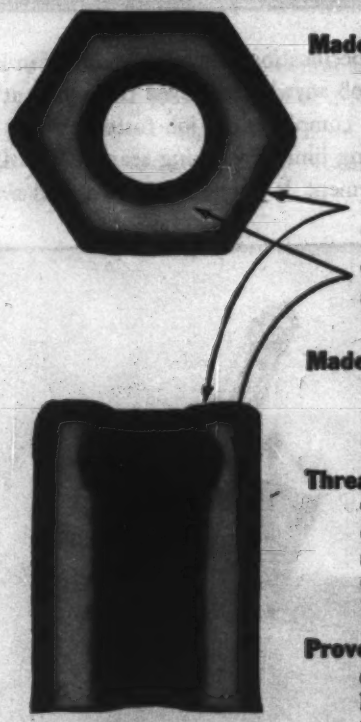
Makeshift Blade Speeds Work

Part of an old grader blade attached to the bucket of a tractor mounted backhoe is speeding the backfilling operations of a Midwest contractor. The attachment more than doubles the area that can be leveled with each pass of the rig. Furthermore, since the bottom of the blade is below the bucket teeth, it fills trenches without any ruts caused by dragging teeth.

The attachment is simple. Two straps, welded to the back of the blade near its top edge, are spaced to fit snuggly against the outer sides of the bucket. A single bolt hole near the end of each strap aligns with a similar hole in the side of the bucket. Since only two bolts are needed to hold the blade in place, attachment and detachment are fast and easy. The idea was conceived by Harry Backhus (shown operating the machine), a partner in the D. & B. Ditching Service, Leavenworth, Kan.

GARDNER-DENVER DRILL STEEL

Cuts drilling costs...reduces steel breakage



Made like tough rock drill parts

Gardner-Denver sectional drill steel is carburized to produce the same hard case, soft core structure that produces superior rock drill parts. Shot-peening increases fatigue resistance.

High-tensile surface strength resists abrasion, corrosion, nicking and down-the-hole gaff.

Tough, soft core provides compressive strength to withstand shock loads without breaking.

Made from quality steel

Gardner-Denver uses special alloy steels to insure uniform hardening and longer service life.

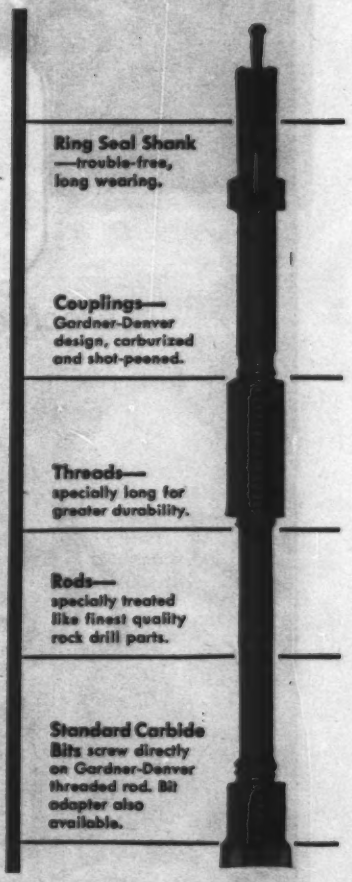
Threads and couplings designed for the job

The extra long threads and couplings of Gardner-Denver design provide greater strength and durability. Couplings are also carburized to provide a hard surface on the threads and a tough core.

Proved on the job

One user drilling hard rhyolite reports steel breakage reduced by 45% after changing over to Gardner-Denver drill steel.

Drill steel represents a large percentage of drilling costs. Gardner-Denver drill steel costs less to use. Write for information.


Ring Seal Shank —trouble-free, long wearing.
Couplings— Gardner-Denver design, carburized and shot-peened.
Threads— specially long for greater durability.
Rods— specially treated like finest quality rock drill parts.
Standard Carbide Bits screw directly on Gardner-Denver threaded rod. Bit adapter also available.

Gardner-Denver Sectional Drill Rod Specifications

	CL5-200 Series	CL5-400 Series	CL5-600 Series	CL5-700 Series	CL5-1000 Series
Thread Size	1¼"	1¼"	1½"	1¾"	2½"
Recommended Drill Size	3" and smaller	4" and smaller	4" and 4½"	4" and 4½"	5½"
Recommended Bit Size	1⅛" to 1⅜"	2" to 2¼"	2⅜" to 2¾"	3" to 4"	4", 4½" and 5"
Rod Sizes	⅞" Hex.	1" Hex.	1¼" Hex.	1¼" and 1½" Hex.	1⅜" Hex.
Rod Lengths	2' to 20'	2' to 20'	2' to 20'	2' to 20'	4' to 20'
Coupling Diameter	1⅞"	1¾"	2¼"	2½"	3⅛"
Ring Seal Shank	1" Hex. Collared 1¼" Rd. Lugged	1¼" Rd. Lugged 1½" Rd. Lugged	1¼" Rd. Lugged 1½" Rd. Lugged	1½" Round	2½" Round

ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER-DENVER

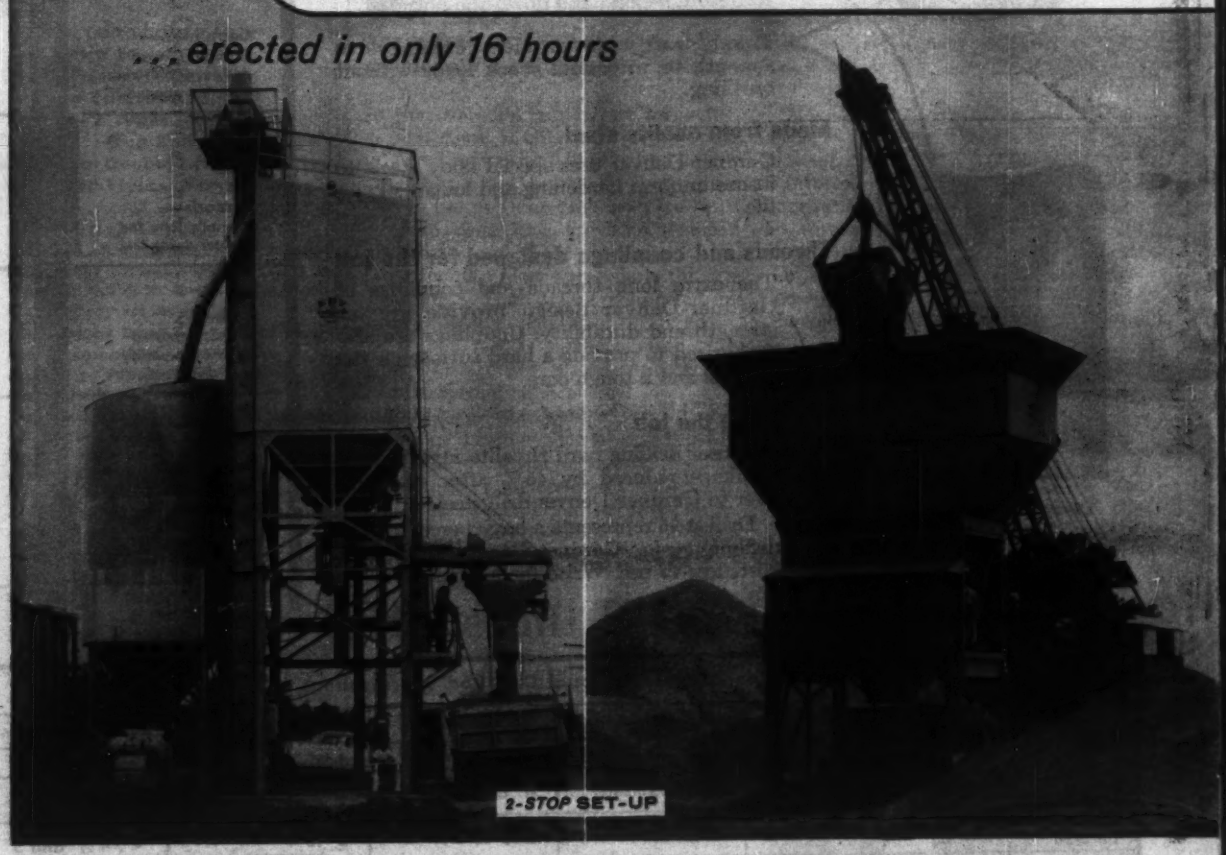
Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada) Ltd., 14 Curity Avenue, Toronto 16, Ontario

NOBLE BATCHING PLANTS...
paving profits on more

Highly portable NOBLE plant batches specification concrete accurately in large volume. It handles virtually any paving job anywhere. Moved frequently at low cost with minimum down-time, NOBLE completes the job faster. Paving contractors can take on additional jobs during limited working season. NOBLE is adaptable to any size job or batch requirement. It can be set up as a dual *single-*

...erected in only 16 hours



2-STOP SET-UP

Martin K. Eby Construction Co., Wichita, Kansas, required a batching plant to supply concrete for a 100,000 square yard extension of airfield runways at Rosecrans Field, St. Joseph, Missouri. Their NOBLE plant having completed a job at Wichita, Kansas, 300 miles away, was dismantled in 10 hours, transported by rail to St. Joseph, Missouri, and reassembled in only 16 hours on low-cost slab footing. The plant batches sand, aggregates and cement in a *2-stop* set-up. The cement batcher weighs, records and discharges 742 lbs. of cement in 12 second cycles. The twin aggregate batcher weighs, records and discharges 4300 lbs. of materials in 15 second cycles. Plant output is over 300 cubic yards per hour. Overhead aggregate bins are charged with a 3½ cubic yard clamshell bucket. Scales, controls, electrical system and other major components are factory installed.

NOBLE **CONCRETE BATCHING PLANTS**

WRITE FOR CIRCULAR

NOBLE COMPANY • 1860-7TH ST., OAKLAND, CALIF. • TEMPLEBAR 2-5785
Branches:
CLEVELAND 14, OHIO—20950 Center Ridge Road, EDison 1-3436
SEATTLE 9, WASHINGTON—516 First Ave. North, ATwater 4-4878
EL SEGUNDO (LOS ANGELES), CALIF.—218 Richmond St. { OREgon 8-6473 / EAstgate 2-4518
DALLAS 35, TEXAS—2512 W. Mockingbird Lane, Fleetwood 7-1904
NEW YORK 17, N. Y.—52 Vanderbilt Ave., OREgon 9-6475
Export Distributor, Fraser International Corp., San Francisco

on-the-move making bigger highway and airfield jobs

stop plant for airfield construction or split into 2 complete plants for separate highway paving jobs in *1-stop* or *2-stop* set-ups controlled by a single operator. Read in the operational stories below how NOBLE plants are profitably used by two leading contractors. Get a NOBLE plant and profit from a larger share of highway and airport paving. Inquire today.

. . . batches average of 4,000 cubic yards of dry materials per day

DUAL *SINGLE-STOP* SET-UP

Two NOBLE plants are batching materials for the construction of 258,000 cubic yards of portland cement concrete pavement at Mather Air Force Base, California. Operating considerably under capacity, the plants load dry batch trucks supplying 4 dual drum pavers. 3 different materials . . . 1½" rock, ¾" rock, sand . . . are stockpiled separately and supplied to both plants by three independent conveyor systems operated by one man. Each plant batches both cement and aggregates and has 150 tons of overhead aggregate storage and 375 barrels of overhead cement storage. Separate ground silos store an additional 3,600 barrels of cement. From its former location at McClellan Air Force Base, California, one of the NOBLE plants was dismantled, loaded and hauled by trucks within legal highway width to Mather Air Force Base, reassembled and put into operation all within 10 days, reports Henry J. List, Project Manager for Gordon H. Ball, Inc., general contractor.

BIRMINGHAM, ALA., Equipment Service Co., Inc. • PHOENIX, ARIZ., Western Machinery Co. • LOS ANGELES, CALIF., Smith-Booth-Usher Co. • DENVER, COLO., Western Machinery Co. • JACKSONVILLE, FLA., Graze-Dempsey, Inc. • MIAMI, FLA., Neff Machinery, Inc. • CHICAGO, ILL., Arrow Contractors Equipment Co. INDIANAPOLIS, IND., Manwering Machinery Co., Inc. • BOSTON, MASS., Hedge & Mattheis Co. • DETROIT, MICH., R. G. Moeller Co. • ST. PAUL, MINN., Borchert-Ingersoll, Inc. • BILLINGS, MONT., Seitz Machinery Co. • KANSAS CITY, MO., Funkhouser Machinery Co. • ST. LOUIS, MO., George F. Smith Co. • ALBUQUERQUE, N. MEX., Contractors Equipment & Supply Co. • SYRACUSE, N. Y., L. B. Smith, Inc. • STATESVILLE, N. C., Interstate Equipment Co., Inc. • CLEVELAND, OHIO, Wapco Equipment Co. • PORTLAND, ORE., Clyde Equipment Co. • HARRISBURG, PA., High Way Equipment & Supply Co. • PITTSBURGH, PA., Equipment & Supplies, Inc. • NASHVILLE, TENN., Peterson Machinery Co. • DALLAS, TEX., Lumby Machinery Co. • EL PASO, TEX., Border Machinery Co. • HOUSTON, TEX., Pearce Equipment Co. • SAN ANTONIO, TEX., Girard Machinery & Supply Co. • SALT LAKE CITY, UTAH, Arnold Machinery Co. • SEATTLE, WASH., Star Machinery Co. • S OKANE, WASH., Western Machinery Co. • CASPER, WYO., Studer Tractor & Equipment Co., Inc. • CALGARY, ALB., Precision Machinery & Equipment, Ltd. • VANCOUVER, B. C., Westcoast Equipment, Ltd. • WINNIPEG, MAN., Huggard Equipment Co., Ltd. • TORONTO, ONT., Ontario Equipment & Supply, Ltd. • MONTREAL, QUE., Laurentide Equipment Co., Ltd.

for users of underground piping systems...

Now... for the first time, basic principles used by RIC-WIL for decades are supported by extensive independent research. These principles are brought out in Technical Reprint #16, issued as a compilation of the results of a survey by the Building Research Advisory Board, of the National Academy of Sciences and tests made by the National Bureau of Standards. These criteria are also the basis of new Guide Specifications issued by several Federal Agencies, all of which include the basic principles of RIC-WIL Prefabricated Insulated Piping Systems. This survey is of such magnitude that it required over 2,000 man-hours and some 2,500 pages of documents and tests.

All tests of a conduit system required by the survey and specifications have been completed by RIC-WIL and an approved independent testing laboratory has certified that RIC-WIL Systems comply. Write, wire or phone for complete information.

Part of test equipment built by RIC-WIL in QUALIFICATION TEST PROGRAM.

Ask for RIC-WIL *Catalog on complete line of systems available.*

Quality Piping Systems...
...of Exceptionally High Thermal Efficiency

SINCE 1910

RIC-WIL PREFABRICATED INSULATED PIPING SYSTEMS

BARBERTON, OHIO

IN CANADA: THE RIC-WIL COMPANY OF CANADA LIMITED

See our catalog in Sweet's and Engineers' Product File

Trees are sliced off with fast, powerful, tractor-mounted blade.

Stinger first splinters the larger trees.

Smooth, flush stump is all that's left.

Clearing Blade Has Stinger

A fast and versatile land clearing tool known as the Rome K/G Clearing Blade is proving its mettle here and in at least 14 other countries. Usually mounted on a Caterpillar D8 tractor, the powerful knife shears trees at ground level, rips out stumps and bulldozes cut trees and brush into windrows.

Three quick steps are involved in removing large trees and leaving the area clean, level and ready for use. A tree is first split above ground level by the implement's "stinger"—a projection at one side of the blade. The angled cutting edge of the full blade shears off the weakened tree as a push bar controls direction of fall.

After the tree is felled, the stump is split with the stinger. Chips are gouged out by a web cutting edge—a curved piece between the stinger and blade. The remaining stump is sheared off flush with the ground and the debris is bulldozed into windrows.

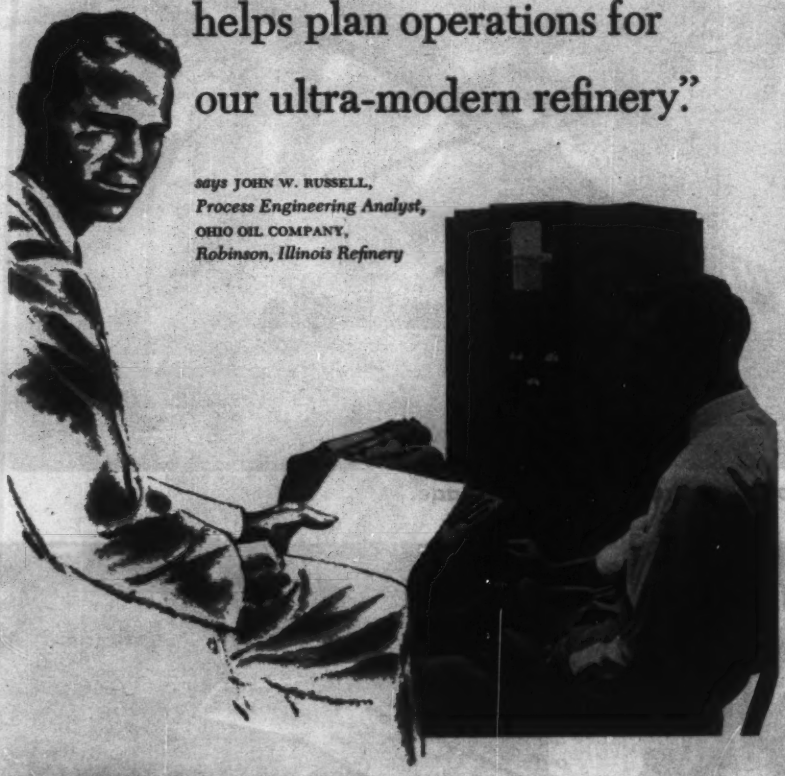
The blade can be titlted to dig up the root system. The operator can also fill the resulting holes and smooth the area with the blade.

Small trees are sheared off at ground level and windrowed to the right. The K/G fells trees away from uncut trees, leaving the working area free.

When necessary, the stinger can be driven under a small tree and the blade raised as the tractor moves forward, removing tree and roots in one pass. Rome Plow Co., Cedartown, Ga.

(New Products continued page 70)

"The Bendix G-15 computer helps plan operations for our ultra-modern refinery."



says JOHN W. RUSSELL,
Process Engineering Analyst,
OHIO OIL COMPANY,
Robinson, Illinois Refinery

"In the highly competitive oil industry, efficiently planned refinery operation is a must. To handle the complex mathematics involved in this planning, we needed the speed of electronic computing. After careful study, we have installed a Bendix G-15 and although it is one of the lowest priced machines, we are using it very successfully on large scale problems. We like the compact size and have found reliability to be exceptional. G-15 users share valuable programs through their own organization, too, and this adds materially to the computer's value."

THE G-15 PROVIDES – Low-cost versatility for thousands of office and laboratory applications – Simplified operating methods – Memory and speed of computers costing four times as much – Typewriter input-output, paper tape output and 250 char/sec paper tape input at no added cost – Expandability through accessories for 1,200,000 words of magnetic tape storage and punched card input-output – Extensive program library – Users share programs – Proven reliability – Nationwide service – Lease or purchase.

Bendix

DIVISION OF BENDIX AVIATION CORPORATION

Built and backed by Bendix, the G-15 is serving scores of progressive businesses large and small throughout the world. For details, write to Bendix Computer, Department F-7, Los Angeles 45, California.

High Stacking Lift Truck Has a Heavy Duty Engine

A 2,000 lb capacity lift truck, the FT 20-24, is powered by a four cylinder, 133 cu in. heavy duty industrial type engine that delivers 35 brake hp at 2,400 rpm.

An "extra-lift" mast gives a maximum stacking height of 131¼ in., over-all lowered height of 83 in. and 16¾ in. of free lift. Designed for easy maneuverability, the truck is 32 in. wide.

The truck comes in gasoline or LP fuel engine models. Two transmissions are available: standard two speed constant mesh or, as optional equipment, power-shift torque converter drive. Mechanically or hydraulically operated attachments, including clamps, side shifters, load back rests and overhead guards, increase versatility. ALLIS-CHALMERS MANUFACTURING CO., MILWAUKEE, WIS.

White Cure Made to Reduce Thermal Cracks in Concrete

A white-pigmented curing compound, Horncure 40W, is spray-applied on exterior horizontal or vertical concrete surfaces.

The dual-purpose compound enables concrete to retain 95% or more of the mixing water for seven days, says the manufacturer. The white pigmentation is said to reflect heat, preventing uneven thermal expansion and premature cracking. Also, the white color keeps workmen from accidentally missing any spots. SUN CHEMICAL CORP., 550 THIRD ST., SAN FRANCISCO 7, CALIF.

Modified Yale Fork-Lift Handles Bulky Loads Easily

Yale has modified its G-3 lift truck to handle the heavy, bulky containers that always present a headache in materials handling.

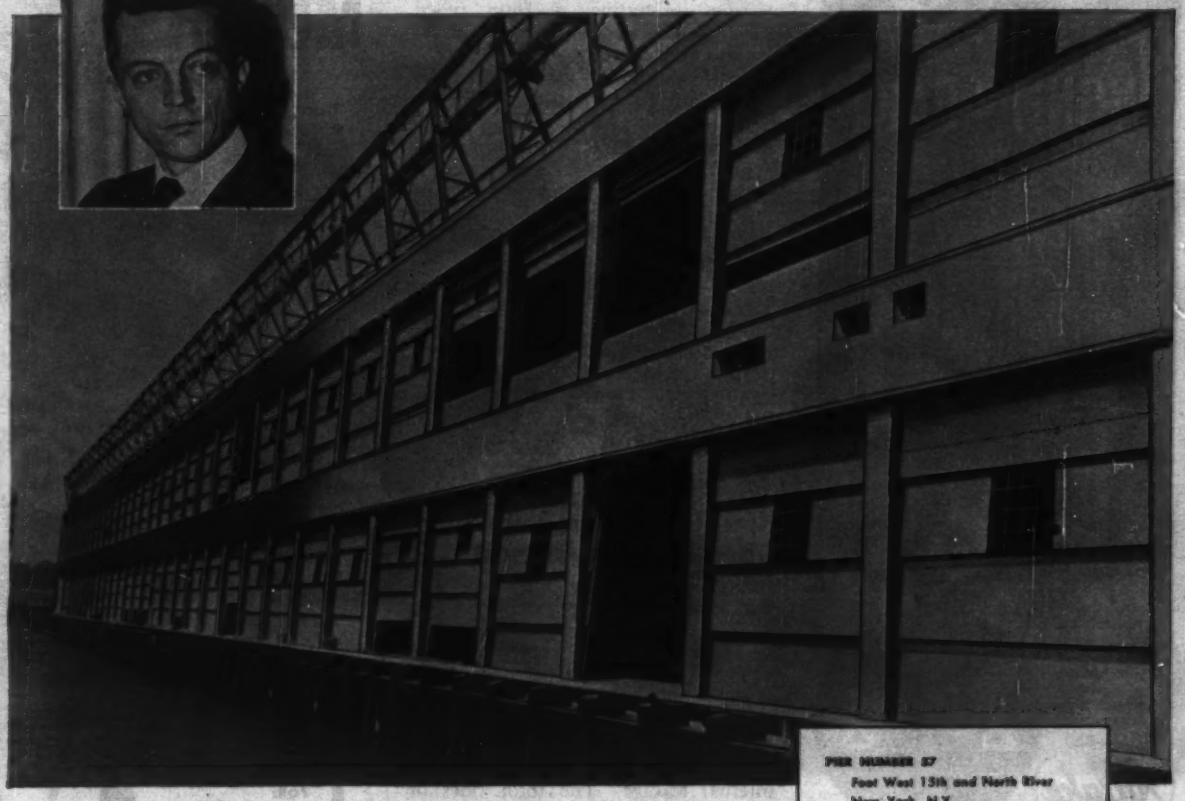
The gas-powered, pneumatic-tired truck can lift 10 tons at a 48 in. load center; the former center was 24 in. The lengthened load center enables the G-3 to transport and stock 20,000 lb loads that extend eight feet out from the face of the fork carriage. Additional capacity was achieved by lengthening the frame and wheel base and by adjusting the counterweight.

The modified truck also can be fitted with a special boom to handle the Model 370 U.S. Sealdbin Container—largest collapsible container in industry for handling and storing bulk materials. YALE & TOWNE CO., MATERIALS HANDLING DIV., 11000 ROOSEVELT BLVD., PHILADELPHIA 15, PA.

(*New Products continued page 72*)

"these doors for PIER 57 are a good example of INTERNATIONAL STEEL'S versatility!"

says MR. FRANK VITOLO, Vice President,
CORBETTA CONSTRUCTION CO., New York City



PIER NUMBER 57
Foot West 15th and North River
New York, N.Y.

CORBETTA CONSTRUCTION CO.
General Contractors for Superstructure
New York, N.Y.

DEPARTMENT OF MARINE AND AVIATION
City of New York — Owners

MADIGAN & HYLAND
Long Island City, N.Y.
Architects and Engineers

INTERNATIONAL STEEL CO.
Fabricators and Erectors

"...a big plus we like to have working with us on our construction projects."

International engineers pooled their experience and ability with all concerned with the Pier 57 project . . . and the result of this teamwork was something new in industrial door design. These International-built doors operate in parallel guides, with each leaf sliding upward in its own angled guide — and finally nesting vertically within the structure's framework.

These doors offer three distinct advantages to every plant, warehouse, pier and factory: (1) doors open up and out of the way — not into the storage area — permitting storage right up to the door, and above the door level; (2) the inner-structure nesting of the leaves of opened doors eliminates interference with fire protection provided by sprinkler systems; and (3) permits unobstructed interior lighting when leaves are open.

International engineers welcome the chance to help you plan applications for your special needs — or to work with you on any door project. Write or call for further information.

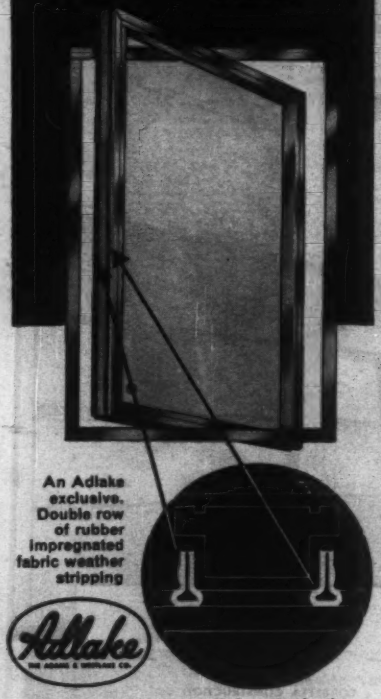
INTERNATIONAL STEEL COMPANY

1455 Edgar Street • Evansville 7, Indiana

Adlake

reversible windows

WON'T LEAK!



An Adlake exclusive. Double row of rubber impregnated fabric weather stripping

Adlake

Adlake—and only Adlake—is double sealed with a resilient, rubber impregnated fabric weather strip, permanently positioned in an aluminum binder. This seal has proved *impervious to the elements* in rigorous laboratory tests and in long years of service.

Cold and inclement weather will not affect this weather stripping. In all climates it keeps heated and conditioned air *IN*, water and outside air *OUT*.

That is one reason why there are nearly as many Adlake reversible aluminum windows in service as all other makes combined. Other reasons are: Adlake windows operate at a finger touch. They will never rot, rust, rattle, stick or screech. They will never need paint. Adlake guarantees satisfaction. When you install Adlake you know you are getting the best.

Let us send you the details about Adlake windows. Just write The Adams & Westlake Company, 1184 N. Michigan, Elkhart, Indiana.

THE

Adams & Westlake

COMPANY

New York...ELKHART INDIANA...Chicago

New Compression Machine Tests Soil Shear Strength

To determine the shear strength of cohesive soils, a new unconfined compression soil-testing machine called model K-W has been announced by Tinius Olsen Testing Machine Co.

Axial loading is accomplished by using a variable speed drive that moves the lower sample head vertically at any constant rate up to 0.15 in. per minute. Strain rate is selected by adjusting a short lever on the motor, and can be checked by timing the motion of the strain dial indicator.

The machine is furnished with a 250 lb capacity load ring. The frame, however, is designed to withstand a maximum load of 2,000 lb, according to the manufacturer.

The unit weighs less than 50 lb and requires some 1½ sq ft of table space. Tinius Olsen Testing Machine Co., 735 Easton Road, Willow Grove, Pa.

New Rotor Type Valves Offer Leak-Proof Seal

A new line of two, three and four-way valves of the rotor type for use in fork lift trucks, loaders and dozers has been announced.

The manually-operated valves are available with open or closed center. These valves incorporate the new Cem-Lap seal, which the manufacturer says is engineered and designed to eliminate internal leakage. The rotor rides on roller bearings. Maintenance is said to be virtually nonexistent as there is only one area of possible wear.

Capacities range from 2½ gpm to 14 gpm with operating pressures up to 3,000 psi. Clark Engineering & Manufacturing Co., Inc., 1820 Layard Ave., Racine, Wis.

Plans Copied in Seconds By Bruning's "Copytron"

Thirty-five millimeter microfilm records can be speedily enlarged and reproduced at relatively low cost by the Model 1000 Enlarger-Printer.

"Copytron," which stands 43 in. high and occupies a 53x32 in. floor area, makes positive enlargements of microfilms for a few cents per print. It enlarges the microfilm 14 to 16 times and prints black-on-white copies ranging from 8½x11 in. to 18x24 in. It also produces enlarged plates for offset printing. The enlarging and printing are done continuously, with four finished prints delivered in a minute. Charles Bruning Co., Inc., 1800 West Central Rd., Mount Prospect, Ill.

CARPULLERS and BARGE MOVERS

SAVE *Drum Type*

Time • Manpower • Handling Delays

Why not apply Mechanical Units designed and built by Superior-Lidgerwood-Mundy Corporation to meet your exact need? *Write for Bulletins and Catalogs*

SUPERIOR-LIDGERWOOD-MUNDY CORPORATION

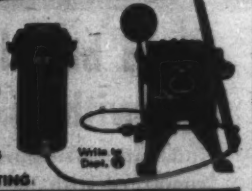
Main Office and Works: SUPERIOR, WISCONSIN, U. S. A.
New York Office, 7 Day Street, New York 7, N. Y.

DUDGEON HYDRAULIC JACKS

SALES RENTALS

CAPACITY TO 800 TONS

FOR:
PILE TESTING
UNDER-PINNING
BRIDGES
PIPE PUSHING
SOIL TESTING



Write for Bulletin Dept. ENR

RICHARD DUDGEON INC

700 BERGEN ST. • ST 9-4040 • BROOKLYN, N. Y.

DO WE HAVE YOUR COMPLETE ADDRESS?

Not unless you included your postal zone number when moving, subscribing or renewing subscriptions.

Contractor: Dondlinger Const. Co.
Consulting Engineers: Black and Veatch Co.

STANG WELLPOINTS DEWATER 15½ ACRES FROM ONE CENTRAL PUMPING STATION

Good imagination, the best equipment, and sound engineering paid off in time saved and a job well done, in dewatering the site of the City of Wichita, Kansas' new secondary sewage treatment plant. A scant 300' from the high stage Arkansas River, water of the total area was controlled by a single stage wellpoint system and one central pumping station consisting of three 12 x 10 Stang wellpoint pumps—**in spite of a 20.5' average riverhead and a 7½" rainstorm.**

The advantages of this approach were many. In addition to the obvious saving of time, the system required fewer operators, much less maintenance, and afforded a flexibility that gave the contractor complete control, allowing him to control the water table in separate areas of the job all from one point.

For an efficient, time and money-saving answer to your next water handling problem, see Stang first. They're first in engineering, first in equipment, and first in service. Contact them now.

JOHN W. STANG CORPORATION

Putting water in its place

STANG

...anyplace!

8221 ATLANTIC AVENUE, BELL, CALIFORNIA

Engineers and Manufacturers of Dewatering Equipment, Wellpoint and Pumping Systems, Dewatering Planning – Equipment – Service

BELL, CALIFORNIA
8221 Atlantic Avenue
Telephone: LUdlow 2-7421

OMAHA, NEBRASKA
2123 South 56th Street
Telephone: WAlnut 7796

PRICHARD, ALABAMA
PO Box 3176
GReenwood 1-1439

SO. MINNEAPOLIS 17, MINN.
5947 Oakland Avenue
TAylor 7-1896

TACOMA, WASHINGTON
2339 Lincoln Avenue
Telephone: Fulton 3-3438

TULSA, OKLAHOMA
4026 South Urbana Street
Telephone: Riverside 2-6929

thanks to *automatic* xerography...

A. Z. Mellon, left, supervisor, reproduction department, at Westinghouse jet engine plant, Kansas City, and O. D. Lambirth, section engineer, examine a series of offset paper masters that emerge as a continuous roll at the rate of 20 feet a minute from the XeroX® Copyflo® 11 continuous printer, background. The Copyflo printer has cut Westinghouse's average cost of preparing a master from 40 to 8⅓ cents, and saved additional time and money in other paperwork duplicating applications.

Westinghouse of Kansas City Saves $35,000 yearly

A XeroX® Copyflo® 11 continuous printer—*automatic* xerography at its brilliant best—has reduced the cost of preparing offset paper masters by nearly 80%, and stepped up reproduction capacity 25 times at the Westinghouse jet engine plant, Kansas City.

In so doing the Copyflo printer is turning out clear, high-quality, paperwork reproduction at a faster rate than the division ever attained previously by any other method.

The Copyflo continuous printer is saving Westinghouse $35,000 yearly. Recent changes in plant operations that will permit greater utilization of the Copyflo printer are expected to double those savings.

Prior to its installation, the cost of preparing an offset paper master, for instance, was approximately 40 cents. Now it is 8⅓ cents.

Westinghouse previously could turn out only 200 masters a day. Recently, it prepared 617 *in one hour* on the Copyflo printer.

Reproduction work at the Aviation Gas Turbine Division in Kansas City consists largely of forms, sketches, engineering drawings, change notices, and specifications. An important part of the volume is the reproduction of operational lineups, of which 100,000 to 140,000 a month are turned out.

Of priceless worth to Westinghouse is the speed with which engineering-drawing changes now reach production lines. Changes are distributed sooner, thus saving tremendously in machining operations.

A Copyflo continuous printer is an automatic copying machine operating on the electrostatic principles of xerography to produce dry, positive prints or offset paper master ready for immediate use. The prints or masters—in enlarged, reduced, or the same size—emerge from the printer at the rate of 20 feet a minute on a 2,000-foot continuous roll 11 inches wide.

Wherever fast and economic copying of thousands of *different* documents is the need, look to the Copyflo continuous printer for the happy solution. For full details write HALOID XEROX INC., 58-137X Haloid Street, Rochester 3, New York. Branch offices in principal U. S. and Canadian cities.

HALOID XEROX

Publications

Timber piles—"Foundation Piles for Permanent Structures" describes the advantages of pressure-creosoted Douglas Fir timber piles. 16 page brochure. Western Wood Preserving Operators Association, 1410 S. W. Morrison St., Portland 5, Ore.

Calcium chloride—How to prepare a standard calcium-chloride solution for ready-mixed concrete. 20 page pamphlet. Calcium Chloride Institute, 909 Ring Building, Washington 6, D. C.

Group relamping—G. E.'s group relamping plan for stores, offices, industrial plants. 16 page booklet. Dept. RL-58, Inquiry Bureau, General Electric Co., Nela Park, Cleveland 12, Ohio.

Porcelain-enameled panels—"Designing for Flatness in Porcelain Enamel Panels" features four design studies of representative panel types. 16-page brochure. Ingram-Richardson Manufacturing Co., Beaver Falls, Pa.

Porcelain enamel—A listing of more than 220 products finished with porcelain enamel. 9 pages. Porcelain Enamel Institute, Associations Building, 1145 19th St., N.W., Washington, D. C.

Polyethylene—Eight-page bulletin describing the applications of polyethylene in the construction and building trades industry. Spencer Chemical Co., Dwight Building, Kansas City 5, Mo.

Air conditioning—Describes in detail the new line of AAF-Herman Nelson Air Conditioning Units. 54 page bulletin 786. American Air Filter Co., 215 Central Ave., Louisville 8, Ky.

Transformers—Guide to dry-type transformers for commercial and industrial building applications. 20 page Bulletin GEC-1600. General Electric, Schenectady 5, N. Y.

Strapping handbook—Detailed construction applications for strapping and materials-handling equipment, securing concrete column forms, fastening insulation around pipes and tanks, bundling of pipe and tying of lumber. 52 pages. A. J. Gerrard and Co., 1950 Hawthorne Ave., Melrose Park, Ill.

Hoists and cranes—Hoists, cranes and crane components—drives, motors, trolleys, runway rails and hanger fittings for building top-riding and underslung cranes from 1 to 15 ton capacity, 64 page manual 58A. Consolidated Crane and Engineering Corp., 767 N. Georgia St., Azusa, Calif.

Cables—Condensed listing of neoprene jacketed industrial electric cables. Western Insulated Wire Co., Los Angeles 58, Calif.

Refractory brick—Aid to design engineers and operators in selecting the proper refractory products for high temperature applications. 24 page booklet with tables, graphs. Norton Co., Worcester 6, Mass.

Air put to work—Covering air handling, conditioning, heating and electronic air cooling. 32 page booklet D-5199. WestinghouseSturtevant Div., Dept. T-189, 200 Readville St., Hyde Park, Boston 36, Mass.

Building insulation—Describes the use of Fiberglass, flexible and rigid metal building insulations for industrial and commercial metal buildings. 12 pages. Owens-Corning Fiberglas Corp., Toledo 1, Ohio.

Switching systems—Design, specifications, installation and basic components of low-voltage switching systems. 18 page brochure. Touch-Plate Mfg. Corp., P. O. Box 1970, Long Beach, Calif.

Speed reducers—Engineering and selection data for shaft-mounted single-reduction drives in six sizes with nominal ratios of 5 to 1 and capacities up to 50 hp; and double-reduction drives in seven sizes with nominal ratios of 15 to 1 up to 40 hp. 24 pages. Book 2618. Link-Belt Co., Dept PR, Prudential Plaza, Chicago 1, Ill.

Cartridge filters—Depth-type fiber filters for full-flow filtration of all kinds of fluids are described. Also given are the advantages of the "graded density" cartridge construction. A chart for selection of the proper filter and cartridge to meet any application requirement is included with performance information. Essential dimensions, installation data and line drawings are given. 12 pages. Catalog No. 53-101. Cuno Engineering Corp., S. Vine St., Meriden, Conn.

Clay pipe—A discussion of Robinson Clay Product's complete line of large diameter clay pipe and fittings with factory made joints. Applications are included. 4 pages. Robinson Clay Product Co., 65 W. State St., Akron 9, Ohio.

Plant Trenches NEED CLEAN, DRY COVERS

TRENCHES in floors of industrial plants often house subsurface pipes, valves, etc. Often these trenches are covered with cast iron plates or wooden boards which collect grease, oil or water, making unsafe floor areas.

Trench covers of 75% open Irving metal grating remain safe because they will not collect these substances. In addition to providing drainage and traction, grating sections can be easily removed for access to trenches.

★

Manufacturers of Riveted, Pressure-Locked and Welded Gratings in Steel, Aluminum and other metals for over 50 years.

"A Fitting Grating for Every Purpose"

IRVICO

IRVING SUBWAY GRATING CO., Inc.
Originators of the Grating Industry

Offices and Plants at
5083 27th St., LONG ISLAND CITY 1, N. Y.
1883 10th St., OAKLAND 23, CALIFORNIA

It's NEW / It's from DORR-OLIVER

THE SR CLARIFIER / . . . for RAPID sludge removal

The new SR Clarifier makes a THREE product separation of sewage. One, it rapidly removes fresh sludge from the floor of the final Clarifier through special vertical withdrawal pipes affixed to a partially submerged trough at the top of the tank. Two, it provides for positive removal of fine silt and other inorganic solids by continuous and positive scraping action to a center sump. Three, it provides for normal effluent overflow over the outside weir.

Advantages of the new SR over *all* competitive units are the positive visual evidence of sludge removal and the separate removal of inorganic solids by continuous raking movements which deposit solids in a central sump from where it is pumped periodically.

For more complete information on the new SR Clarifier for rapid sludge removal write Dorr-Oliver Incorporated, Havemeyer Lane, Stamford, Connecticut.

DORR-OLIVER
INCORPORATED
STAMFORD • CONNECTICUT • U. S. A.

GUNITE
Since 1913
CONCRETE
SAND AND CEMENT
Placed by Air
GUNITE
BLO-CRETE WET-CRETE
LINING, ENCASING, FIREPROOFING, REPAIRING
Send for our new bulletin No. 20 of actual photographs, information and detailed specifications.
GUNITE CONCRETE & CONST. CO.
1301 WOODSWETHER RD., KANSAS CITY 5, MO
2016 W. Walnut St., Chicago 12, Ill.
1004 Market St., St. Louis 1, Mo.
3206 Houston Ave., Houston 9, Texas
1136 W. Orangethorpe, Fullerton, Calif.
Milwaukee, Twin Cities, Denver, New Orleans

PHOENIX BRIDGE COMPANY
Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS
General Office and Shops
PHOENIXVILLE, PA.
Subsidiary—Bethlehem Steel Corporation

Obituaries

Charles W. Allen, 53, Research Engineer, Ohio Department of Highways. A 1929 civil engineering graduate of Ohio State University, he was active in committee work for the Highway Research Board and The American Society for Testing Materials. He was also a member of the American Society of Civil Engineers, the Ohio Professional Engineers and the American Concrete Institute.

J. Frank Kirkpatrick, 72, former Indiana State highway bridge engineer. He was a 1907 graduate of Purdue University.

Brother Jerome H. Parr, 49, dean of the College of Engineering at the University of Dayton from 1953 to 1956.

Charles B. Lewis, 85, retired Philadelphia consulting engineer.

Dwight E. Perrine, 57, Assistant Chief Engineer Chicago and Western Indiana Railroad and the Belt Railway Company of Chicago. A graduate of the Georgia Institute of Technology, he had been active in railroad work since 1933. He was a member of the American Railway Engineering Association and the Western Society of Engineers.

James E. Barlow, 76, retired city manager of Portland, Me. He was a graduate of Massachusetts Institute of Technology. In the course of his career he was city manager of Dayton, Ohio, New London, Conn., and Portland, where he served from 1928 until his retirement in 1946.

Henning H. Henningson, 79, in Omaha. He founded the architect firm of Henningson, Durham and Richardson in 1917. He retired in 1950. His firm was responsible for organization and engineering of most of Nebraska's rural electrification program.

Jesse H. Fisher, 75, Asheville, N. C., consulting engineer. A former associate with the John Geary Construction Co. and Southern Construction Co., he built many of Asheville's largest structures.

Alfred S. Wyllie, 79, civil engineer formerly employed by the Port of New York Authority, the New York Board of Transportation and the New York Board of Water Supply.

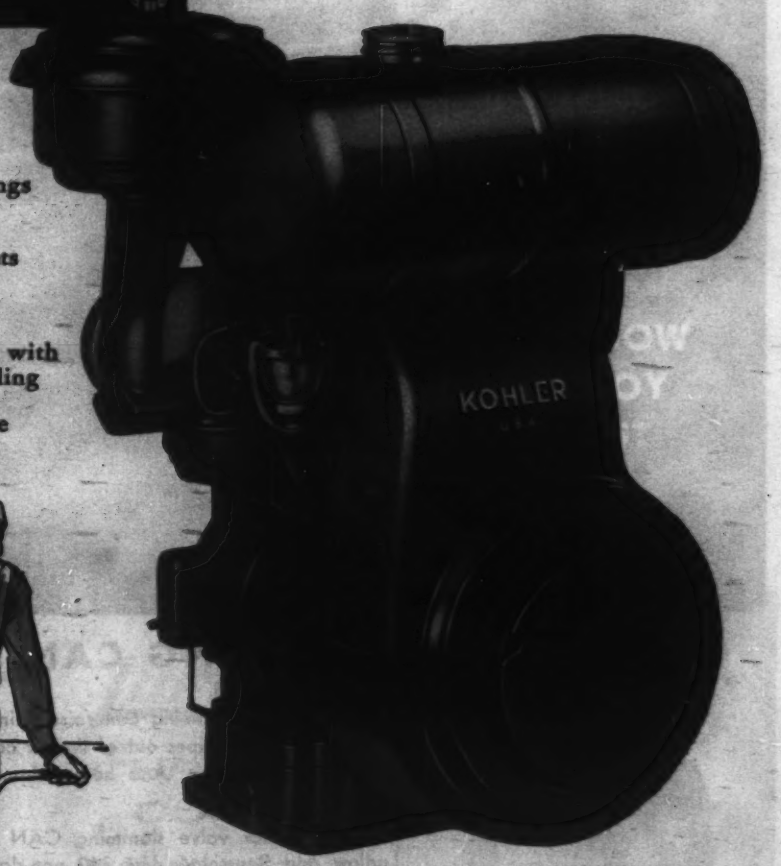
Raymond A. Prendergrast, 66, head of the Atlantic City, N. J., contracting firm of R. A. Prendergrast & Son.

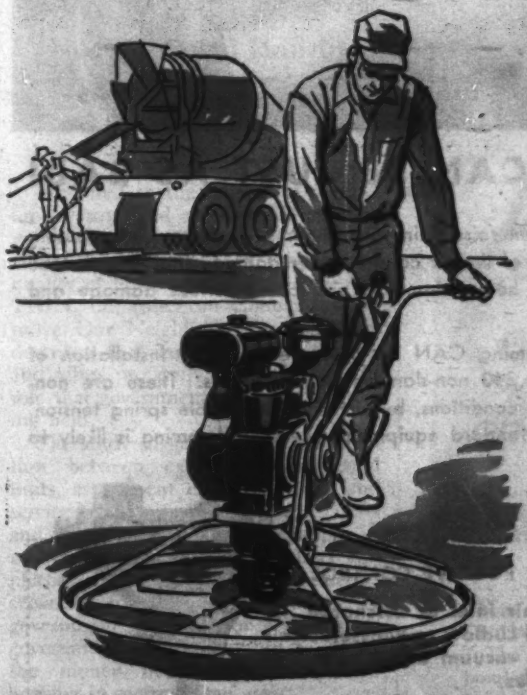
KOHLER ENGINES

4-CYCLE SHORT-STROKE AIR-COOLED

MODEL
K160

- Balanced crankshaft—ball bearings at both ends
- Externally mounted breaker points
- Positive splash lubrication
- Aluminum alloy cylinder head with deep fins spaced for efficient cooling
- Mechanical governor for accurate R.P.M. control





RELIABLE

Kohler engines, conservatively rated, will do the jobs for which they are recommended.

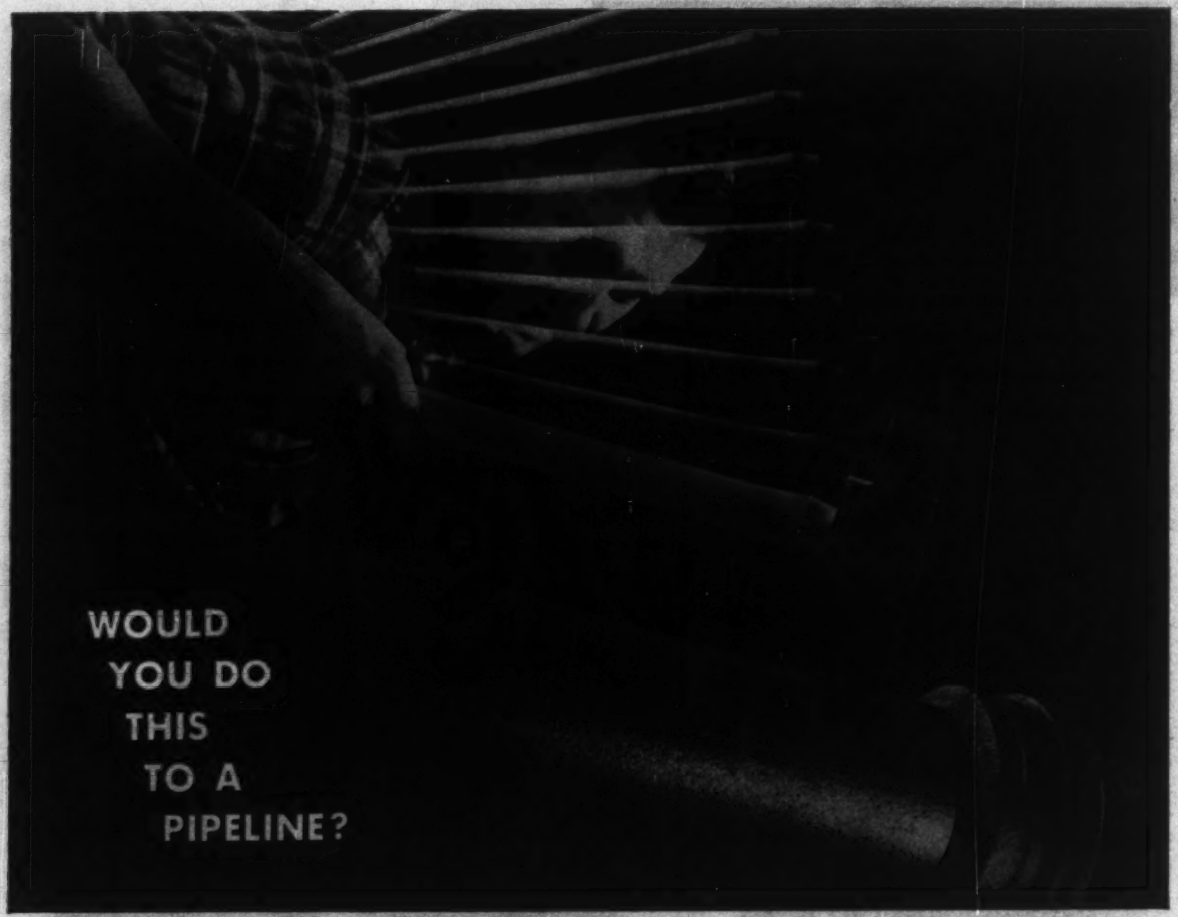
Kohler quality—recognized and respected throughout the world—is built into every engine.

FROM 3 TO 24 H. P.

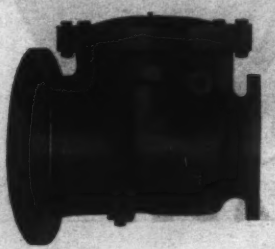
Send for 28-page illustrated booklet

KOHLER CO. Established 1873 KOHLER, WIS.

KOHLER OF KOHLER



CHECK VALVE SLAMMING CAN BE JUST AS BAD!



Even moderate slamming can raise cain with a pump discharge line, causing leakage, throwing pipes out of line or causing other damage that may not be discovered for years. And heavy slamming can cause serious damage and service interruption.

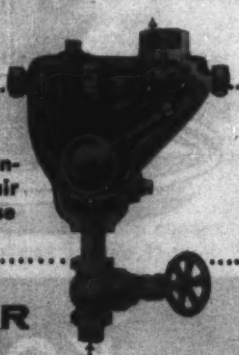
However, check valve slamming CAN be prevented . . . by installation of Ludlow and Rensselaer List 340 non-slamming check valves. These are non-slamming under most severe conditions, by virtue of adjustable spring tension, and are recommended as standard equipment wherever slamming is likely to occur.

Ludlow and Rensselaer check valves are available in sizes from 3 to 30 inches, with or without lever arm and spring. All materials and workmanship exceed the A.W.W.A. requirements for gate valves and fire hydrants.

Write today for the L&R Check Valve Catalog

FOR POSITIVE CONTROL

of air inlet or discharge, install Ludlow or Rensselaer air and vacuum and air release valves.



LUDLOW & RENSSELAER

VALVES & HYDRANTS

THE LUDLOW VALVE MANUFACTURING CO., INC., TROY, N.Y. SINCE 1861

Books

Building Construction Text

MATERIALS AND METHODS OF ARCHITECTURAL CONSTRUCTION—Third Edition, by Harry Parker, Charles Merrick Gay and John W. MacGuire. 724 pp. John Wiley & Sons, Inc., New York; Chapman & Hall, Ltd., London. $12.

This text and reference book on building construction has been almost completely revised. However, it still retains its original objective: to present in one volume condensed essential information on materials and methods used in building construction.

The book is divided into two parts. Part I covers materials, including a discussion of floor and roof systems and fireproofing. Part II deals with methods of construction. But it also incorporates a chapter on mechanics of materials.

The revision adds new material on tiltup and lift-slab construction, glued-laminated wood members, resilient flooring, reflective insulation, lightweight plasters, stressed-skin construction, prestressed concrete and shells, to mention only a few.

Government and Housing

GOVERNMENT AND HOUSING IN METROPOLITAN AREAS—By Edward C. Banfield and Morton Grodzins. 177 pp. McGraw-Hill Book Co., New York, Toronto, London. $6.50.

Presented as the second of a series on housing and community development, the book analyzes the role and effect of government in growth and quality of housing. Sponsored by ACTION, the American Council to Improve Our Neighborhoods, the study describes the problems and obstacles, and offers proposals for improving the role that government plays in the housing field.

The study suggests greater collaboration between existing governmental units, assignment of specific plan and service tasks to metropolitan-sized units and adoption of uniform practices in metropolitan areas. The authors emphasize that development cannot be separated from the main structure of government and that only the larger government units can afford to spend the money necessary for improved housing in metropolitan areas.

Reports and Pamphlets

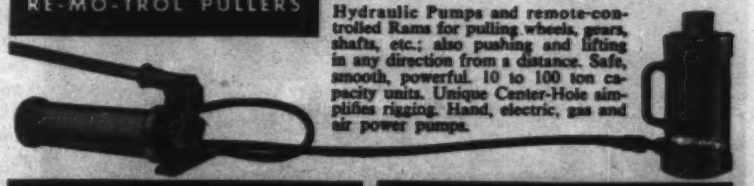
CONFERENCE ON SOILS FOR ENGINEERING PURPOSES STP 232—500 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $9.00.

PROCEDURES FOR TESTING SOILS—552 pp. American Society for Testing Materials,

Push, Pull or Lift Safely with SIMPLEX

HYDRAULIC EQUIPMENT

RE-MO-TROL PULLERS



Hydraulic Pumps and remote-controlled Rams for pulling wheels, gears, shafts, etc.; also pushing and lifting in any direction from a distance. Safe, smooth, powerful. 10 to 100 ton capacity units. Unique Center-Hole simplifies rigging. Hand, electric, gas and air power pumps.

JENNY "CENTER-HOLE" PULLERS

Self-contained Hydraulic Pullers with famous Center-Hole for easy pulling, pushing, lifting. Rugged, versatile; 6 models, 30 to 100 ton capacities.

STANDARD HYDRAULIC JACKS

Sturdy, safe, efficient units to do any lifting job easy and fast. 8 models; 3 to 100 ton capacities.

Get full information on the most complete industrial line of Hydraulic Jacking and Pulling equipment; write for Hydraulic Bulletin.

SIMPLEX JACKS

TEMPLETON, KENLY & CO.

2352 Gardner Road, Broadview, Ill.

There's no paint on Lufkin Chrome Clad Anchor Tape lines.

The bold, black markings are bonded to the basic metal . . . protected with several electroplatings that give extra strength to the line. The final metal coat is Lufkin's exclusive Chrome Clad finish. Glare free, smooth, rust resistant . . . the most durable tape line you can buy.

Anchor lines are replaceable in the genuine-leather, hand-stitched case. Available with markings in feet, 10ths and 100ths.

THE LUFKIN RULE COMPANY

TAPES • RULES • PRECISION TOOLS

NEW LITERATURE FOR YOU!

Send coupon for facts about the new

MAXON DUMPCRETE CONCRETE SPREADER

If you're a concrete paving contractor, you'll want specifications, description, test reports, drawings and illustrations of the new Dumpcrete Spreader. Designed to work with low-cost Dumpcretes, the new spreader makes the "central-mixing—non-agitated hauling" concrete method more economical, more flexible and more productive than ever before.

MAXON CONSTRUCTION COMPANY, INC.
Manufacturing Division—42
2600 Far Hills Building, Dayton 19, Ohio
Please send details on the new Dumpcrete Spreader

NAME_____
TITLE_____
FIRM_____
ADDRESS_____
CITY_____ ZONE____ STATE____

SCOTT CONTRACTORS' FIELD OFFICES

ALL SIZES—CUSTOM DESIGNED

1959 MODELS

36 FEET COMPLETE **$2495** F.O.B. NYC

Equipped with Toilet, Water Heater, Desks, Drafting Table, BX Wiring, Oil or Gas Floor Heat and Many Other Features. These Trailers Meet All State & City Requirements. High in Quality—Low in Cost

OTHER MODELS—NEW & USED—ON DISPLAY

For Further Information Call or Write

NASSAU TRAILER & MOTOR SALES

2351 JERICHO TPKE.
Garden City Park, L.I., N.Y. **PI 6-1401**

. . . Books

1916 Race St., Philadelphia 3, Pa. $6.75.

How to Become a Professional Engineer—by John Constance. 272 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $5.50.

Engineering Vibrations—by Lydik S. Jacobsen and Robert S. Ayre. 564 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $10.00.

Prestressed Concrete—Theory and Design—by R. H. Evans and E. W. Bennett. 294 pp. John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y. $10.00.

Buildings for Research—224 pp. F. W. Dodge Corp., 119 W. 40th St., New York, N. Y. $9.50.

Industrial Maintenance Painting—Second Edition. 189 pp. Paul E. Weaver, 4025 Brady St., Baton Rouge 5, La. $5.50.

Paint, Varnish, Lacquer, and Related Products—900 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $8.25.

Tentative Guide for Fatigue Testing and the Statistical Analysis of Fatigue Data—90 pp. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $3.75.

Government and Housing in Metropolitan Areas—by Edward C. Banfield. 226 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $6.50.

Plastics in Building Illumination—99 pp. Building Research Institute, National Academy of Sciences—National Research Council, 2101 Constitution Ave., Washington 25, D. C. $3.00.

The Fourth National Surveying Teachers Conference—165 pp. D. H. Harkness, Secretary, Committee VIII, c/o W. & L. E. Gurley, 514 Fulton St., Troy, N. Y. $2.00.

1957-1958 Publication of the National Associations of Organizations of Students of Architecture—The American Institute of Architects, 1735 New York Ave. N.W., Washington 6, D. C. $2.00 for students and libraries; $3.00 elsewhere.

Engineering Consultants—American Institute of Consulting Engineers, 33 W. 39th St., New York 18, N. Y. $2.50 cloth-bound; $1.50 paper-covered.

Operational Mathematics—Second edition. By Ruel V. Churchill. 337 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $7.00.

How to Supervise People—by Alfred M. Cooper. Fourth edition. 264 pp. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $4.95.

Trouble-Free Hydraulics—by Ian McNeil. 121 pp. Ronald Press Co., 15 East 26th St., New York 10, N. Y. $6.50.

Technical Drawing—844 pp. The Macmillan Company, 60 Fifth Ave., New York 11, N. Y. $7.50.

The Yearbook of Agriculture 1958—605 pp. Superintendent of Documents, Washington 25, D. C. $2.25.

Sale-Leasebacks and Leasing in Real Estate and Equipment Transactions—by Harvey Greenfield, and Frank K. Griesinger. McGraw-Hill Publishing Co., 330 W. 42nd St., New York 36, N. Y. $15.00.

Liquidated Damages

Court looks to see if amount is reasonable

Where a contract provides liquidated damages for delayed performance, courts will enforce the clause if the amount stipulated is reasonable and not punitive.

The rule is discussed in a recent Missouri case where the contractor for a power line failed to meet the completion date. It took him 193½ days longer than the contract time as extended.

The contract contained the following provision: "Section 3—Liquidated Damages. The time of completion of the construction of the project is of the essence of this contract. Should the contractor neglect, refuse or fail to complete the construction within the time herein agreed upon, after giving effect to extensions of time, if any, herein provided, then in that event and in view of the difficulty of estimating with exactness damages caused by such delay, the owner shall have the right to deduct from and retain out of such moneys which may be then due, or which may become due and payable to the contractor, the sum of one hundred dollars ($100.00) per day for each and every day that such construction is delayed in its completion beyond the specified time, as liquidated damages and not as a penalty."

The contractor claimed that the amount withheld for delayed performance calls for a penalty rather than liquidated damages; that the contract provision was unenforceable, and that the owner was only entitled to withhold the actual damages sustained.

At the trial, both parties conceded that as a result of the delayed performance, the owner had to pay its engineer $4,837.50 and $542 for electricity. No other specific items of damage were proven, although the owner claimed that it had sustained other damage. The contractor claimed that most of the delay in performance was caused by acts of the owner, but at no time did the contractor ask for further extensions or complain of the alleged wrongful acts on the part of the owner. The court held,[1] that the liquidated damage clause of the contract was not a penalty and was enforceable.

The court stated: "First of all it is recognized that the particular type of contract used here is quite common, and is generally recognized and used in the construction business, and is peculiarly appropriate when the stipulated damages are graded according to the extent of the breach, increasing proportionately with each day's delay. See 3 Williston, Contracts, Rev. Ed. Sec. 785. When the damages are uncertain in nature or amount or are difficult of ascertainment and the amount agreed on is not extravagant and unreasonably disproportionate to the damages that actually resulted from a breach of the contract, the contract provision is upheld. 25 C. J. S. Damages, Section 101a, Buchanan v. Louisiana Purchase Exposition Co., 245 Mo. 337, 149 S.W. 26.

"Of course there can be no question of the right of parties to a contract to agree among themselves what the damages should be in the event of a breach. See the old case of Morse v. Rathburn, 42 Mo. 594, with its many subsequent citations. Hence, in determining whether a provision in a contract provides for a penalty or liquidated damages the intention of the parties in each case, measured from the time the contract was executed and not hindsight after the performance is completed, is the test to be applied. Wilt v. Waterfield, Mo., 273 S. W. 2d 290, 295, Yerxa, Andrews & Thurston v. Randazzo Mfg. Co., 315 Mo. 927, 288 S.W. 20, Blackwood v. Liebke, 87 Ark. 545, 113 S. W. 210.

"It follows, therefore, that where the stipulation of the contract provides a method for determining liquidated damages, the burden of establishing the contract provision to be a penalty is on the party urging it. 25 C.J.S. Damages, Section 102a. . . ."

The court stated that both parties to the contract were competent to contract "and contracts made by parties who are under no compulsion beforehand relating to the amount of damages which are allowed for a breach are as lawful as any others unless they are proscribed by some of the established rules of law. Courts will not enforce stipulations for liquidated damages where the stipulated sum to be paid is unreasonable or oppressive, or where it is established that it is in fact a penalty and not an agreement as to simple damages. Courts properly will enforce those contracts as made where they do not conflict with the declared public policy of the state. See Wilt v. Waterfield, supra, Thompson v. St. Charles County, 227 Mo. 220, 126 S.W. 1044.

"Here the provision of the contract has reference to uncertain damages. Serious damage might have been incurred. Where a public corporation is

Sound Powered Telephones

for tunnels bridges highways and similar arteries

Help to keep traffic rolling . . . to ease tie-ups . . . to report changing conditions.

NEED NO CURRENT

Theses phones provide positive communication at all times without the use of batteries or other outside sources of current. Operate with unusual clarity over a distance of many miles. In outdoor or indoor models—in standard systems or those altered to your specifications.

Send for illustrated catalog

HOSE-McCANN TELEPHONE CO., INC.

751 THIRD AVE. BROOKLYN 32, N. Y.

This compact Jaeger Model 2PN, pumps all the water a 2" suction hose can handle. **With 2½" suction hose it pumps more than 14,000 gph.**

Now handle more water with Jaeger pumps

Today's Jaeger Sure Prime pumps deliver performance never before offered—and at slower, long-life operating speeds. For example, a Jaeger 6PH can handle 100,000 gph as a dewatering pump or deliver 975 gpm at 60 psi pressure for well point jetting or gravel washing. Base your pump buying on latest information. See your Jaeger distributor or send for catalog.

THE JAEGER MACHINE CO., 200 Dublin Avenue, Columbus 16, Ohio

AIR COMPRESSORS • MIXERS • PAVING SPREADERS and FINISHERS

F/S OPTICAL PLANIMETER
Model 236/A
Eyestrain and parallax in contouring the figure are eliminated by the optical tracer. No need for subtracting the initial reading or adjusting the counting wheel manually.
• Tracing lens providing large magnification
• Zero setting control
• Vernier unit adjustable from .006 to .020 square inches
• Full servicing by factory specialists
F/S offers a complete line of high
engineering instruments.
nearest dealer or write
detailed literature.
RAGHI, INC.
41-14 24th St.
L. I. C. 1, N. Y.
"Dealers Inquiries Invited"

F/S DISTRIBUTORS: The A. Lietz Co., San Francisco and Los Angeles, Calif.—National Blue Print Co., Chicago, Ill.—Watts Instruments, Columbus, Ohio—Geo. F. Muth Co., Inc., Wash., D. C.—CANADA: Instruments 1951 Ltd., Ottawa, Toronto, Regina, Montreal.

involved the convenience of the beneficiaries of the service may be considered, and that damage cannot be measured in dollars. Thompson v. St. Charles County, supra. The loss of good will of defendant (power corporation) itself may be considered and that element can be measured in dollars only generally, and with great difficulty. May v. Crawford, 142 Mo. 390, 44 S.W. 260.

"Here we have a contract for $379,136.23. Actual damage in the amount of $5,379.50 has been proved and is agreed. $13,970.50 representing an agreed damage for the intangible unprovable items resulting from a delay of 193½ days is not so unreasonable, so exorbitant, so oppressive as to justify a court in disregarding the clear intention of the parties at the time the contract was executed.

"I must conclude that the provision relating to liquidated damages is valid and enforceable, that plaintiff (contractor) has failed to discharge its burden to demonstrate otherwise, and plaintiff is not entitled to the relief it seeks here."

(1) Manufacturers Casualty Ins. Co. v. Sho-Me Power Corp., 157 F. Supp. 681, U. S. District Court, Missouri, Dec. 30, 1957.

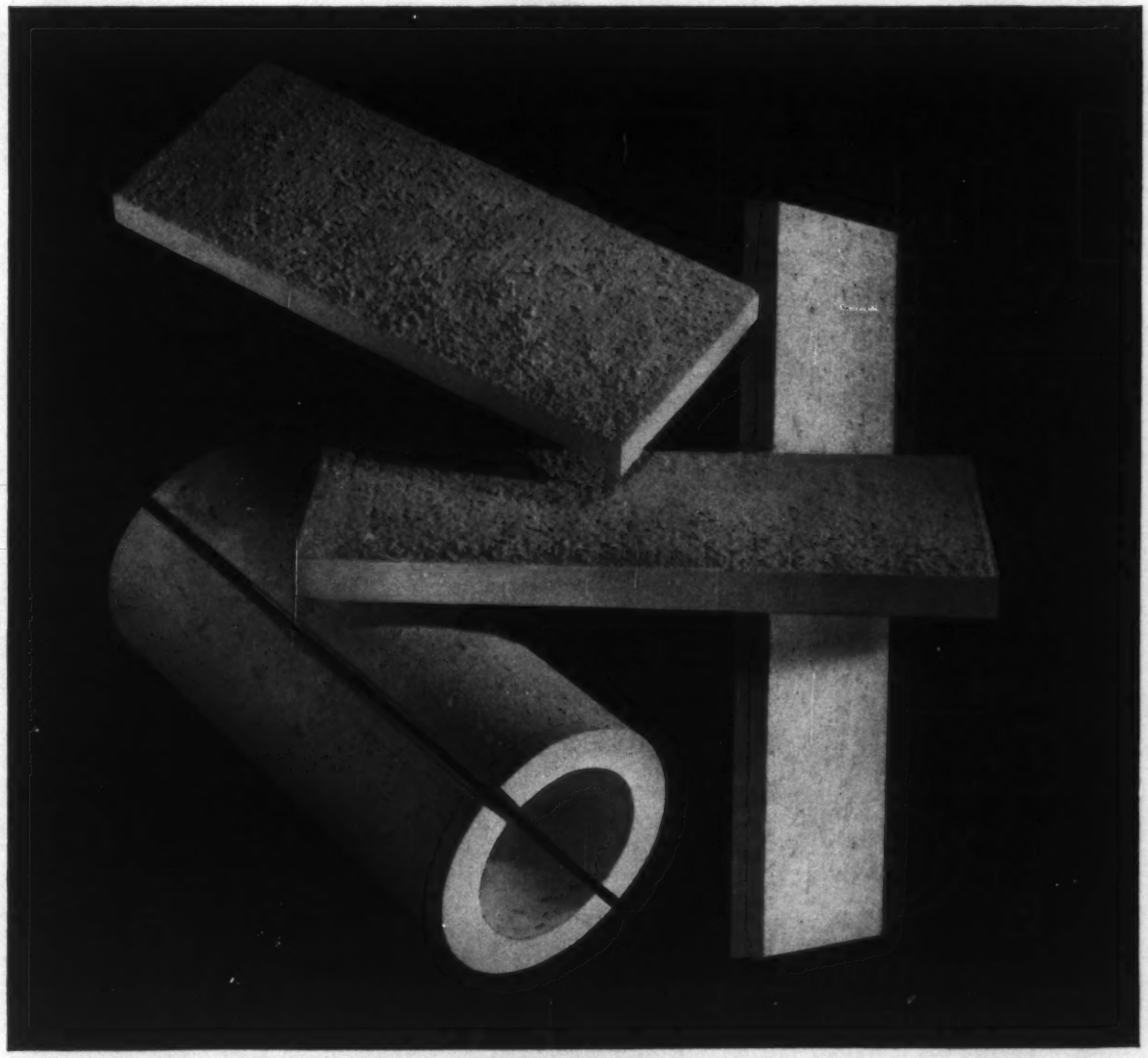
Owner Held Justified In Paying Suppliers

Where a contractor is in financial trouble and can't meet his obligations to subcontractors and suppliers, the owner may, under some state laws, pay off the obligations and deduct them from the amount due the contractor under the contract.

The point was argued in an Oklahoma case where the owner, for whom a house was being built, made direct payments to subcontractors, laborers and material suppliers. The payments amounted to $8,207. Contract price was $9,306.

The contractor was subsequently adjudged bankrupt and the trustee in bankruptcy brought an action against the owner and some of the suppliers of material to recover the money paid directly to them. The trustee claimed that the contractor was entitled to such payments. The court denied the trustee any recovery on the ground that under Oklahoma law the owner was justified in protecting his property from liens of materialmen and subcontractors by making direct payments to them and that the contractor was in no way prejudiced by the making of such payments.

The court stated: "A trustee in bankruptcy acquires no better title than



For paper pulp refining as in other operations, "K&M" High-Pressure Insulations provide durable, economical heat control.

Your customers get more heat from every ounce of fuel with "K&M" High-Pressure Insulations!

Minimize installation time and costs, and be sure of customer satisfaction. How? With "K&M" High-Pressure Insulations.

Maximum fuel efficiency, minimum fuel costs, and more precise process control—that's what you offer your customers with "K&M" High-Pressure Insulations. They last the lifetime of the equipment. Tame temperatures of up to 1900° F. Withstand temperature changes, vibration, and moisture.

The ease of handling and installing of "K&M" High-Pressure Insulations makes your job quicker and more profitable.

Write to us today for a free brochure on "K&M" High-Pressure Insulations.

For temperatures up to 1900° F., use "K&M" Hy-Temp Combination—diatomaceous silica overlaid with "K&M" "Featherweight" 85% Magnesia. Staggered joints prevent heat loss from expansion-caused openings.

For temperatures up to 1350° F., use "K&M" Kaytherm—hydrous calcium silicate bonded with asbestos fibers. Important for petroleum and power applications.

For temperatures up to 600° F., use "K&M" "Featherweight" 85% Magnesia—a basic carbonate of magnesia mixed with asbestos fibers.

K·M
BEST IN ASBESTOS

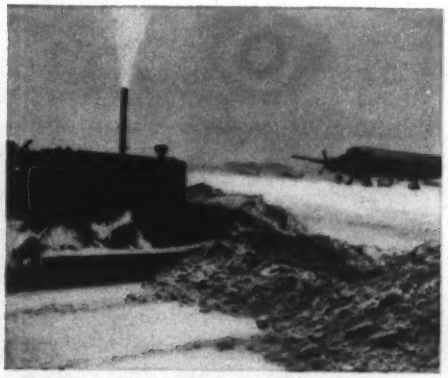
KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

GROUNDED . . . FOR LACK OF STEEL PIPE SNOW MELTING!

At airports all through the snow belt it was the same story last winter . . . plane traffic delayed or suspended altogether until runways could be cleared of heavy snow.

Many engineers believe that in the jet age the only practical solution to airport snow removal problems will be found in *steel pipe* snow and ice melting systems for runways, loading areas and hangar approaches. Otherwise, these 10-mile-a-minute airplanes will simply "hurry up to wait."

Steel pipe has a solid background of success in snow melting systems just as it does in radiant heating, fire sprinkler systems, vent and drainage lines, electrical conduit, refrigeration, structural use, gas, oil and water lines. It is the most widely used metal pipe in the world because it is the least expensive and the most versatile.



Photos show bulldozers clearing heavy snow at two large airports.

STEEL PIPE IS FIRST CHOICE

- Low cost with durability
- Strength unexcelled for safety
- Formable—bends readily
- Weldable—easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
- Grades, finishes for all purposes
- Available everywhere from stock

INSIST ON PIPE MADE IN U.S.A.

COMMITTEE ON STEEL PIPE RESEARCH

AMERICAN IRON AND STEEL INSTITUTE

150 East Forty-Second Street, New York 17, N.Y.

that held by the bankrupt himself. United States v. Sampsell, 9 Cir., 1946, 153 F. 2d 731, 735. Moreover, state law governs in determining what property belongs to the bankrupt and touching the existence and priority of liens. Seymour v. Wildgen, 10 Cir., 1943, 137 F. 2d 160."

The Oklahoma Statute referred to is as follows: "The risk of all payments made to the original contractor shall be upon such owner until the expiration of the sixty days herein specified, and no owner shall be liable to an action by such contractor until the expiration of said sixty days, and such owner may pay such subcontractor the amount due him from such contractor for such labor and material, and the amount so paid shall be held and deemed a payment of said amount to the original contractor."

Since Federal Courts usually follow the law of the state where the cause of action arises, it is clear that under the local statute, the owner was fully justified in making payments to the subcontractors to avoid their placing mechanic's liens on the property.

(1) Stone v. Mondie, 157 F. Supp. 929, U.S. District Court, Oklahoma, Nov. 21, 1957.

Owner Holds Contractor For Debt to Supplier

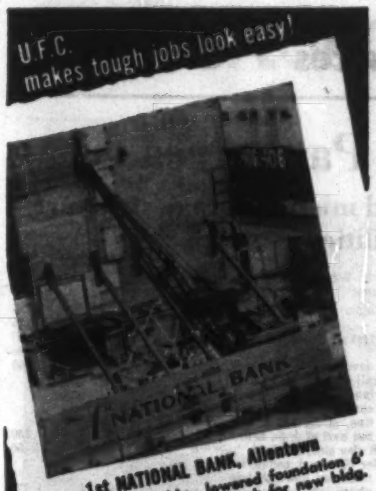
A contractor is liable to the owner for the unpaid amounts due material suppliers.

In an Arkansas case, a contractor sued the owner of a house to recover the balance due under the contract. One of the contractor's material suppliers had, in the meantime, filed a mechanic's lien against the property for materials furnished the contractor and then sued to recover the money due him.

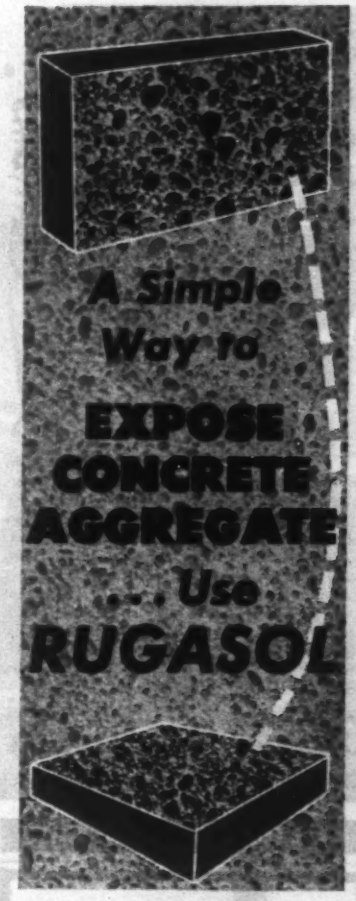
Both actions were combined. The court granted the contractor a recovery but reduced the amount claimed by the contractor by the amount owed the materialman. The materialman was given a judgment for the amount due him.'

(1) West v. Page, 305 S.W. 2d 336, Supreme Court of Arkansas, Sept. 30, 1957.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Constructors, Architects and Engineers;* and *Legal Cases for Contractors, Architects and Engineers.*


U.F.C.
makes tough jobs look easy!
1st NATIONAL BANK, Allentown
Shored up old bldg., lowered foundation 6' while doing foundation work for new bldg.
✓PILING ✓FOUNDATIONS
✓SHORING ✓UNDERPINNING
✓CONSULTATION & DESIGN
UNDERPINNING & FOUNDATION CO., INC.
155 E. 44th St., New York 17, N. Y.
General Contractors For More Than 50 Years
Inquiries are invited — no obligation

WEATHERTITE
POSITIVE SEAL for CONTROL JOINTS
WEATHERTITE "R"
BUILDING PAPER
MORTAR
CAULKING
MICHIGAN CONTROL JOINT
To safeguard against cracks in block-constructed masonry walls, always use an approved Control Joint. To prevent water seepage through these control joints, always use WEATHERTITE seals. Two types are available: WEATHERTITE "R" for Michigan Control Joints; WEATHERTITE "RB" for Besser Control Joints. WEATHERTITE is a specially shaped strip of expanded Polyvinyl-Chloride which provides a permanent and effective waterlight seal in standard control joints. See Sweet's Architectural File, or write for information on WEATHERTITE; EVERLASTIC GASKETS for stone coping, sills, masonry wall panels, etc.; and WATERSTOPS for sealing construction joints between cast-in-place concrete members.
WILLIAMS
EQUIPMENT and SUPPLY CO.
456 E. Eight Mile Rd. Hazel Park, Mich.



You will find that exposing concrete aggregate with Sika Rugasol is simple because it eliminates the need for costly chipping, hacking, or sandblasting. There are two types of Rugasol:

RUGASOL F . . . is painted directly on formwork. When forms are stripped (in 2 to 5 days), the retarded mortar is removed with a jet of water or stiff brush.

RUGASOL C . . . is applied on the surface of freshly placed concrete. On the following day, the retarded surface mortar is removed with a jet of water or stiff brush.

For complete information on Rugasol, call or write for Bulletin RG-58.

Ad 28-4

SIKA CHEMICAL CORPORATION
PASSAIC, NEW JERSEY
DISTRICT OFFICES: ATLANTA • BOSTON • CHICAGO • DALLAS • DETROIT • NEW ORLEANS • PHILADELPHIA • PITTSBURGH • SALT LAKE CITY • WASHINGTON—DEALERS IN PRINCIPAL CITIES—AFFILIATES AROUND THE WORLD

"SUMMERAIRE HEATERS SAVED ME FROM LOSS ON FOUR JOBS LAST WINTER"

Contractors from coast to coast saved thousands of man-hours last winter by using the Clayton SUMMERAIRE portable heater to keep jobs moving in spite of cold, damp weather. SUMMERAIRE dries out masonry construction, paint and plaster. Ideal for curing concrete, thawing out aggregates, frozen equipment and materials; heating semi-enclosed work areas. Made in two sizes and several models; electric or gasoline engine drive; with capacities of from 120,000 to 375,000 BTUs per hr. Safe, economical, efficient. Write today for full particulars

Clayton SUMMERAIRE

Clayton Manufacturing Co., Dept. I

Box 550, El Monte, California

ORDER FROM YOUR EQUIPMENT DEALER

Save Time Finding Blueprints Save Space

Provides a mobile, protective, vertical file for 1200 large prints in only 24 lineal inches...all organized and identified for instant use. Sheets can't get mislaid or lost...no folding, rolling or stacking.

PLAN HOLD Vertical Filing Systems bring engineering efficiency to the care and use of plans, prints, maps, all large sheets. See your engineering and office supply dealer or write for Catalog 581 to Plan Hold Corp., South Gate, California.

Nike Bases for St. Paul Area

Buildings and underground missile storage structures were bid in lump sum; utilities in unit prices

On July 11 construction began on four Nike antiaircraft missile installations for the Minneapolis-St. Paul defense area. The $5,883,851 award by the Corps of Engineers to Steenburg Construction Co., St. Paul, Minn., low bidder on all four bases, breaks down like this:

Site & location	Amount	% under engrs. est.
MSP-20, Roberts, Wis.	$1,825,458	14.0
40, Farmington, Minn.	1,482,888	13.8
70, St. Boniface, Minn.	1,456,651	14.9
90, Bethel, Minn.	1,457,854	17.2
Project total	$5,913,851	15.0
Contractor's discount for getting all four awards	30,000	
Total contract	$5,883,851	

In addition to other work, installations at each site include a missile assembly and test building, generator buildings, underground missile storage structures, a ready building, interconnecting corridor building, barracks, administration and recreation buildings, and a water pumping and storage system.

The government furnishes frequency converters, engine generators, transfer and control panels, mufflers, elevators and elevator equipment.

Class A concrete must develop a compressive strength of 3,000 psi, 5.5 bags of cement per cu yd.

Cast iron pipe must conform to ASTM standards A21.2, A21.6, A21.8, class 150, or to federal specifications WW-P-421, class 150.

Since most items are similar on all four installations and Steenburg Construction Co. is low bidder on all of them, unit prices are given for only the first of the installations, MSP-20, Roberts, Wis.

Minimum wages on that installation include: carpenters, $2.90; electricians, $3.34; tractor, power shovel and crane operators, $3.11; common laborers, $1.65.

The seven bids on site MSP-20 included:

1C Steenburg Constr. Co., St. Paul, Minn.	$1,825,458
2 M. J. McGough Co., St. Paul	1,613,088
7 Jos. A. Bass Co., Minneapolis	1,788,250
EE Corps of Engineers, St. Paul	1,774,982

Bids: 6-24-58 Items	Unit	Quantity	Unit Prices 1C	2
*Underg missile storage, structures, water pump & storage system	ls	job	$989,781	$1,065,000
Well equip, contr & launch site...set up & remov	ea	2	154.50	155.00
cased hole, 12"	lf	25	10.30	10.30
10"	lf	10	9.27	9.27
uncased hole, 12"	lf	280	6.18	6.18
10"	lf	280	5.66	5.67
8"	lf	50	5.15	5.15
6"	lf	50	4.12	4.12
grout	bag	230	4.12	4.12

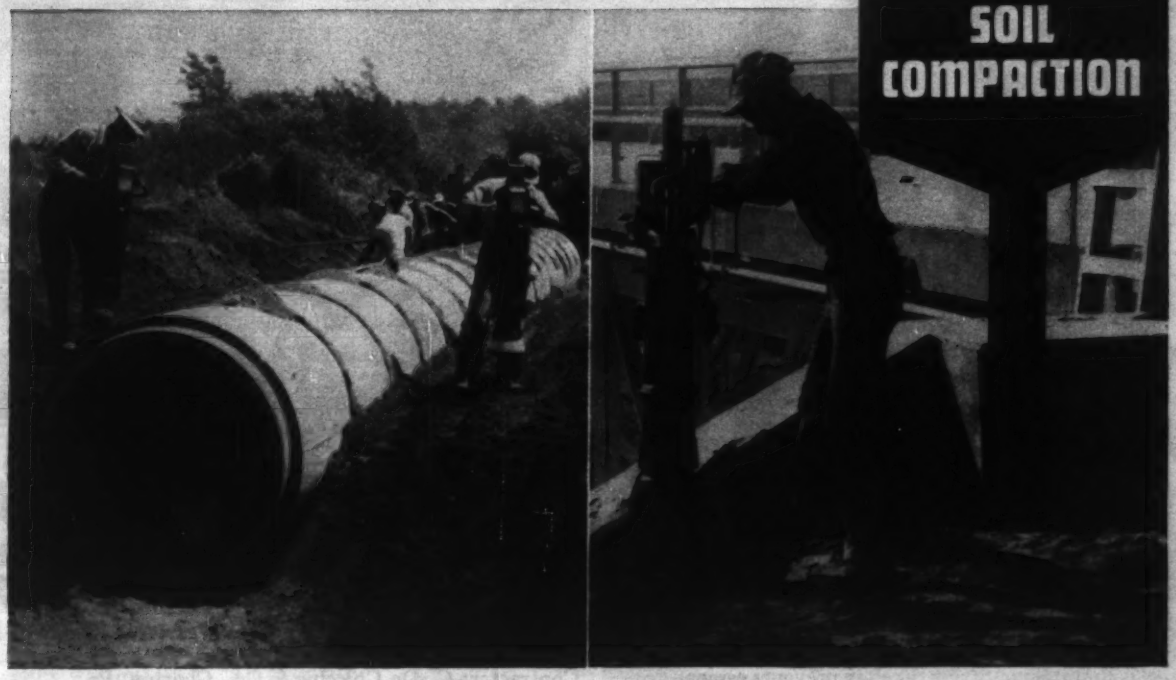
Bids: 6-24-58 Items	Unit	Quantity	Unit Prices 1C
inner casing, 8"	lf	285	5.25
6"	lf	270	3.35
test pump, installation/removal	ea	4	309.00
pumping	hr	33	30.00
development	hr	20	30.00
Septic tank & distr box at launcher site, w/line to connect units, incl inlet line, struct exc & bkfl, but excl of drain field	ls	job	2,292
Vit clay pipe, tile field	lf	754	3.00
Elec distr syst, compl, incl duct for undergr telephone syst, control site	ls	job	76,711
launcher site	ls	job	57,283
Clear & grub, common	ls	job	309.00
Exc, common	cy	95,000	0.35
rock, other than util.	cy	19,400	3.60
for utilities	cy	50	17.00
Borrow, random	cy	1,000	0.41
select subgrade	cy	300	0.87
frost free material	cy	8,500	1.70
Riprap	sy	40	13.36
Topsoil	ls	job	3,399
Fert, lime, seed & mulch	ls	job	6,650
Landscaping	ls	job	3,824
Concrete walks	sf	9,000	0.66
curbs	lf	530	3.60
Guard posts	ea	5	5.56
Chain & all posts for fuel delivery roads	ea	3	30.56
Fence, security	lf	9,270	4.08
gates cantilev slide, 20'	ea	2	705.04
double swing, 20'	ea	2	367.71
Pipe culvert, 8"	lf	104	2.27
10"	lf	20	2.83
15"	lf	441	3.71
18"	lf	84	5.15
24"	lf	24	7.21
CMP arch, 29x18"	lf	33	7.72
36x22"	lf	114	8.76
Flared end sects, culvert, 12"	ea	17	18.54
18"	ea	4	22.66
24"	ea	2	36.05
arch, 29x18"	ea	2	41.20
36x22"	ea	6	56.65
Catch basins, culverts	ea	3	231.75
Base course	cy	4,500	7.36
Subbase course	cy	8,750	7.36
Granular filter	cy	4,500	2.58
Bituminous prime coat	gal	7,980	0.22
surface course	t	2,400	15.24
material	gal	31,600	0.22
Stab agg surface course	cy	900	8.09
Concrete pavement	cy	790	38.07
Port cmt for conc pavment	bbl	1,140	4.63
Conc parkg blocks 8" sects	ea	57	9.48
Sewer pipe, sanitary, 8"	lf	2,000	4.38
CIP, 8"	lf	20	7.72
VCP, 6"	lf	10	4.64
Building drains, 8"	lf	90	4.64
CIP, 6"	lf	20	6.70
CIP soil pipe, 4"	lf	80	4.64
2"	lf	300	3.35
Manholes, 2-6' deep	ea	3	154.50
6-8' deep	ea	9	206.00
8-10' deep	ea	4	242.05
10-12' deep	ea	2	283.25
Conc encasement & cradle	cy	10	56.65
Wye branches, 8x8"	ea	2	5.15
Cleanouts, 2"	ea	2	36.05
Absorption pits	ea	4	195.70
Wtr mainsserv lines, 8"	lf	35	4.64
4"	lf	880	3.86
3"	lf	1,775	3.35
2½"	lf	50	2.83
2"	lf	400	3.09
1½"	lf	130	2.83
¾"	lf	100	2.32
Gate vlv box, 8"	ea	1	103.00
4"	ea	2	87.55
3"	ea	3	72.10
2"	ea	3	61.80
Air release vlv & manhole	ea	1	463.50
Hydrant, frost free	ea	1	51.50

*Includes generator buildings, ready building, interconnecting corridor, missile assembly building, entry boxes, water treatment pump house and reservoir, paint and oil storage buildings, barracks, mess hall, administration, recreation and storage buildings, and miscellaneous shade & pit, radar pads, lore mast base and anchors

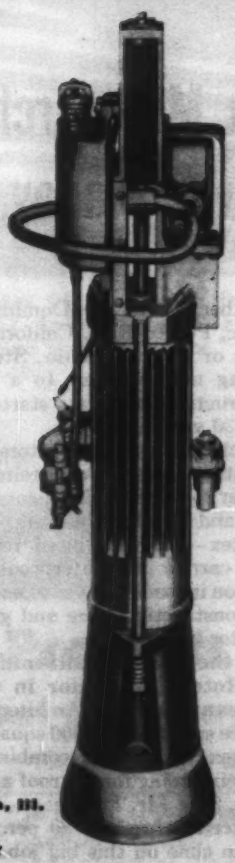
Commence: 7-11-58. Complete: 302 days.
Liquidated damages: $1,500 day after 7-1-59
$100 day after 10-1-59

Where SPECIFICATIONS call for . . .

HIGH DEGREE
SOIL
COMPACTION



BARCO RAMMERS are THE ANSWER!



YOU can't get *high degree* SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

THE KEY TO BETTER CONSTRUCTION—High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches—on all kinds of construction jobs: Toll Roads, Freeways, and Highways; Air and Missile Bases, Hydro-electric Power and Flood Control Dams, Bridges, Buildings, and Housing Developments.

ONE MAN OPERATION—On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18" trench backfill, using lifts up to 24", the rate is 360 to 600 feet per hour.

ASK FOR A DEMONSTRATION—We will be glad to arrange a demonstration for you; see our nearest distributor or write. SEND FOR A COPY OF CATALOG 621.

Sold and Serviced by the Nation's Leading Distributors

PRODUCTS BACKED BY EXPERIENCE
BARCO
FOUNDED 1908

BARCO MANUFACTURING CO.
514M North Hough St., Barrington, Ill.
BARCO RAMMER
for High Degree Soil Compaction
BARCO VIBRA-TAMP
for Granular Fill and Bituminous Surfacing

At Penn Township Senior High School near Pittsburgh, a workman easily places Steeltex Floor Lath around a steel column. Snug-fitting Steeltex prevents cement drip-through. Architect: Joseph Hoover, AIA, Pittsburgh. Structural Engineer: Leland W. Cook, RPE, Pittsburgh. Contractor: C. De Chicchis & Co., Clairton, Pa.

Six More Architects, Contractors Tell Why Steeltex Saves Money, Speeds and Improves Construction

Whether it's in the Dominican Republic, Puerto Rico, California, New York or Pennsylvania, Steeltex is writing new chapters to a story of construction economy started more than 30 years ago.

Architects and contractors are documenting the story of Steeltex as one answer to steadily rising construction costs and shrinking budgets. They say Steeltex—the wire mesh reinforcing that carries its waterproofed form right on its back—saves money, shortens construction time and gives you a better job.

At the lavish, multi-million dollar Hotel Embajador in the Dominican Republic, Architect Roy F. France specified 244,000 square feet of Steeltex to provide combined form and reinforcing for the roof and seven floors. Said Mr. France:

"Steeltex brought 20 percent savings in time on this big job. Steeltex is easy and quick to install. This brings savings on labor costs."

Mr. France reported similar savings at the beautiful Hotel San Juan Intercontinental in Puerto Rico. This 320-room structure required 250,000 square feet of Steeltex from Pittsburgh Steel Products Division of Pittsburgh Steel Co.

Taylor Construction Co. of Miami, the general contractor, estimated savings through using Steeltex "averaged 19 percent over other systems."

Said Aaron Baer, chief of estimating for Taylor Construction:

"Where thin slab over prefabricated steel or concrete joists is the basis for design, Steeltex is in a class by itself —time-wise and cost-wise—in bringing savings."

At the Atwater, Calif., Research Project School, 30,000 square feet of Steeltex was combined with reinforcing rods to provide support for a thin shell catenary roof construction.

"Steeltex helped create a fireproof span of clean appearance at a cost and insulation factor equivalent to conventional wood joist classroom construction," declared Architect Frank Wynkoop, AIA, of Los Angeles.

At 6010 Wilshire Office Building in Los Angeles, 18,000 square feet of Steeltex Floor Lath saved $5,000 in labor and materials, according to Quinn and Conant, Hollywood contractors.

"Steeltex was installed in just 10 days," said Lewis F. Conant. "If we had used conventional wood forms, we would have taken 30 days.

"We have made comparisons of the cost of concrete slabs using Steeltex as opposed to two-inch planking on wood purlins. We find Steeltex and concrete is approximately 20 percent less expensive and gives the owner much more for his money." Architect for the job was Sidney Eisenshtat, AIA. Structural Engineer: Joseph Sheffet, CEAC, both of Los Angeles.

Similar commendations for Steeltex come from Dean Natali, superintendent for C. De Chicchis

Atwater Research Project School in California has 30,000 square feet of Steeltex installed to provide form in a thin shell catenary roof construction. Architect: Frank Wynkoop, AIA, Los Angeles. Contractor: Graham & Jensen, Merced, Calif.

At 320-room Hotel San Juan Intercontinental, Puerto Rico, 250,000 square feet of Steeltex supports the roof and floors. Taylor Construction Co. of Miami estimates savings through using Steeltex "averaged 19 percent over other systems." Architect: Roy F. France & Son, Miami Beach.

& Co., contractors for construction of the $5-million Penn Township Senior High School near Pittsburgh.

More than 100,000 square feet of Steeltex was installed. "An alternate material would have taken three or four times longer to install than Steeltex," said Mr. Natali.

"We used five men to put down Steeltex in the length of time it would have taken 20 men to install a sheet material."

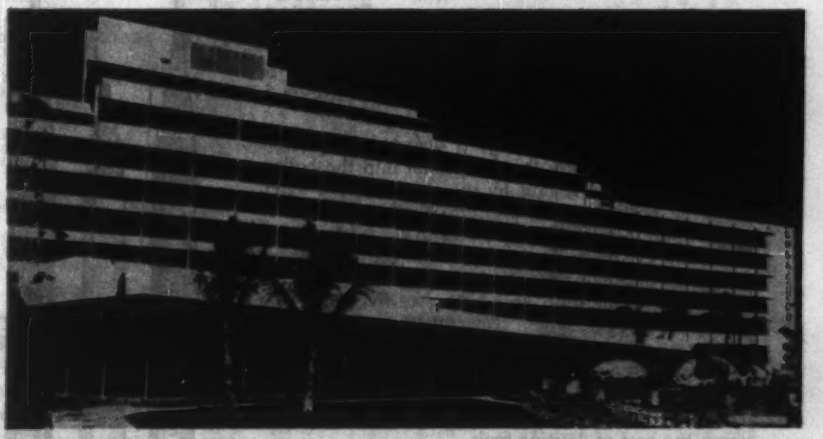
"On top of that," Mr. Natali continued, "there is less waste with Steeltex because it prevents drip-through of cement to the floor below by fitting snugly around protruding objects."

On Long Island, N. Y., at Plainedge High School, 150,000 square feet of Steeltex provide form and reinforcing for the roof and floors. Architects for construction were Jagow & Heidelberger, Hempstead, L. I.; Structural Engineers: David R. Maiman Associates, Valley Stream, L. I.

George F. Hayden, superintendent for the contractor, Paul J. Roche, Inc., Baldwin, L. I., has used Steeltex for 20 years. Today he still looks to Steeltex to help build stronger, more durable floors and roofs.

"There's no other type of reinforcing material more economical than Steeltex," stated Mr. Hayden. "It's easy to install, eliminates form work and makes for a better slab."

All these benefits of Steeltex—and more—can be put to work for you, too. All it takes is a phone call to the Pittsburgh Steel Products sales office nearest you. Trained engineers are available to help you solve your construction problems. Call today . . . you'll be glad you did tomorrow.



Hotel Embajador in Dominican Republic has 244,000 square feet of Steeltex Floor Lath supporting the floors and roof. Architect Roy F. France of Miami Beach says, "Steeltex brought 20 percent savings in time." Contractor: Merritt-Chapman & Scott Corp., New York.

▶ See Sweets Catalog Section 2-B

Steeltex

Pittsburgh Steel Products

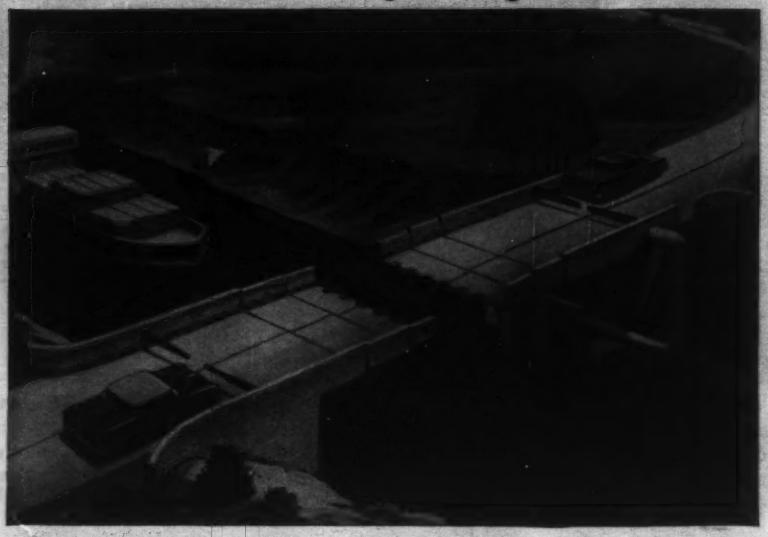
a division of **Pittsburgh Steel Company**

Grant Building • Pittsburgh 30, Pa.

District Sales Offices

Atlanta	Cleveland	Dayton	Los Angeles	Pittsburgh
Chicago	Dallas	Detroit	New York	Tulsa
		Houston	Philadelphia	Warren, Ohio

MARS outstanding design SERIES



automated bridge

The bridge of tomorrow will be self-activating, equipped with electric-eye controls and an anti-freeze system. No overhead structures will obstruct the view, or interfere with radio reception, according to Robert J. Companik of Chicago.

In his design, the bridge is operated by pressure pumps that draw water from the canal into the hollow structure and hold it shut by the weight of the water. To allow boats to pass, pressure is released, counterweights pull the sections together, and the bridge opens. An electric eye down the canal activates the opening and the bridge does not close until an eye on the other side is passed. Heating units keep both eyes free from snow and ice, and a brine system keeps the bridge in operation in freezing weather.

Many ingenious solutions to traffic and other problems are on the boards today. To make their ingenuity clear, and to translate them from idea into reality, requires the best of drafting tools.

In pencils, of course, that means Mars, long the standard of professionals. Some outstanding new products have recently been added to the famous line of Mars-Technico push-button holders and leads, Lumograph pencils, and Tradition-Aquarell painting pencils. These include the Mars Pocket-Technico for field use; the efficient Mars lead sharpener and "Draftsman" pencil sharpener with the adjustable point-length feature; Mars Lumochrom, the color-drafting pencils and leads that make color-coding possible; the new Mars Non-Print pencils and leads that "drop out" your notes and sketches when drawings are reproduced.

2886 J.S.STAEDTLER MARS-LUMOGRAPH GERMANY
1001 J.S.STAEDTLER MARS-LUMOGRAPH TECHNICO
2618 J.S.STAEDTLER MARS-LUMOCHROM GERMANY

The 2886 Mars-Lumograph drawing pencil, 19 degrees, EXEXB to 9H. The 1001 Mars-Technico push-button lead holder. 1904 Mars-Lumograph imported leads, 18 degrees, EXB to 9H. Mars-Lumochrom color-drafting pencil, 24 colors.

J.S. STAEDTLER, INC.
HACKENSACK, NEW JERSEY

at all good engineering and drawing material suppliers

3rd MARS Design Contest

HACKENSACK, N. J. — The MARS Outstanding Design Contests have uncovered numerous interesting designs which might otherwise never have been brought before technical audiences. They have attracted such wide interest that MARS Pencils is sponsoring another contest in 1959.

Robert J. Companik, Chicago, Ill., one of the winners in the 1958 MARS Contest. Mr. Companik's project, "Automated Bridge," is featured in the MARS presentation on this page.

If you are an engineer, architect or student, the MARS contest offers you a "showcase." It provides you with a valuable opportunity to have projects you designed shown in leading magazines where they will be seen by the men in your profession.

$100 Awards

Send in your designs. Every winner will receive $100; winning entries will be reproduced in the wide list of technical publications in which the MARS Outstanding Design Series appears. There are no strings attached. You will be given full credit. All future rights to the design remain with you. You can reproduce it later wherever you like and sell or dispose of it as you wish.

The subject can be almost anything — aviation, space travel, autos, trains, buildings, engineering structures, household items, tools, machines, business equipment, etc. Projects will be selected on the basis of appeal to design-minded readers, broad interest, attractive presentation. Do not submit a design that is in production. The project, in fact, does not need to have been planned for actual execution. It should, however, be either feasible at present or a logical extension of current trends. It cannot be unrealistic or involve purely hypothetical alterations of natural laws.

The sooner you send in your entry, the greater the chance of its selection.

It is Simple To Submit a Design For Mars Outstanding Design Series

Just mail in an inexpensive photostat or photocopy of the subject — one you can spare, since it cannot be returned — and a brief description.

If your entry is accepted, we will ask for a clear illustration of your design in order to prepare a sharp rendering, or photograph suitable for reproduction. Your material will then be returned to you.

Send your entry to:

J.S. STAEDTLER, INC.
Hackensack, New Jersey

Materials and Labor Prices

Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Oct. 23; Next, Nov. 20
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Oct. 30; Next, Nov. 27
- Wage Rates, Building Board, Lath, Insulation: Last, Oct. 30; Next, Nov. 27
- Cement, Aggregate, Ready-Mixed Concrete, Asphalt: Last, Nov. 6; Next, Dec. 4

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS* billet	RIVETS ½-in. struc.	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.50	$5.30	$5.075	$12.25	.....	$110.00	$130.00	$6.975	$9.75	$8.00	.....
Chicago Area	5.50	5.30	5.075	12.25	$8.00	110.00	130.00	6.975	9.75	6.00	.....
Pittsburgh Area	5.50	5.30	5.075	12.25	8.00	110.00	130.00	6.975	9.75	6.00	$14.75
Buffalo Area	5.50	5.30	5.075	12.25	8.00	110.00	130.00	6.975	9.75	6.00	14.75
Cleveland	.....	.....	5.075	12.25	8.00	.....	.....	.....	.....	.....	14.75
Youngstown Area	.....	.....	5.075	.....	.....	.....	.....	.....	9.75	.....	.....
Geneva	5.50	5.30	.....	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles	6.20	.....	6.375	.....	8.80	.....	.....	.....	9.75	8.75	.....
Pueblo	.....	.....	.....	.....	.....	.....	.....	6.975	9.75	8.00	.....

* Fairless Works, $5.575.

IRON AND STEEL PRODUCTS—F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	STRUCTURAL SHAPES Extras, New York:	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	Extras, New York:	EXPANDED METAL LATH Per 100 sq. yd., carload lots Std. diamond mesh, 2.4 lb.	EXPANDED METAL LATH Std. ribbed 2.4 lb.	WELDED FABRIC REINFORCING Per 100 sq. ft., carload lots fob mill
Atlanta	$6.40		9.35	$9.01		$83.00	$87.00	
Baltimore	9.675		8.70f	.....		42.00	46.50	
Birmingham	9.00r		8.90r	8.90r		87.00y,K	92.00y,K	
Boston	10.01g,K	Quantity extras, per cwt: under 100#, +$10; 100-399#, +$7; 400-999#, +$4.50; 1,000-1,999#, +$3; 2,000-4,999#, +$2; 5,000-9,999#, —$1; 10,000-19,999#, —$1.25; 20,000-39,999#, —$1.50; 40,000 and up, —$2. Item price: 1,000-1,999#, —25¢; 2,000-4,999#, —50¢; 5,000-9,999#, —75¢; 10,000-19,999#, —$1; 20,000-39,999#, —$1.25; 40,000 and up, —$1.50.	8.75K	8.75J	XTRAS, per cwt—Quantity (applies to L/C/L mills only): under 1,000#, +$1.50; 1,000-1,999#, +$1; 2,000-3,999#, +$1.50; 4,000-9,999#, +50¢; 10,000-19,999#, +25¢; 20,000-39,999#, +50¢; 40,000 & up, +$1. Size extras, per cwt: #2 & heavier, +10¢; #3, +20¢; #4, +30¢; #5, +40¢; #6, +50¢; #7, +60¢; #8 & lighter, +70¢. Length extras: #2 & heavier, +10¢; #3, +20¢; #4, +30¢; #5, +40¢; #6, +50¢; #7, +60¢; #8 & lighter, +70¢. Lengths: 18' & under, +10¢; 19' & 20', +20¢; 21' & 22', +30¢; 23' & 24', +40¢; 25' & 26', +50¢; 27' & 28', +60¢; 29' & 30', +70¢. Lengths: 31' & 32', +80¢; 33' & 34', +90¢; 35' & 36', +$1; 37' & 38', +$1.10; 39' & 40', +$1.20; 41' & 42', +$1.30; 43' & 44', +$1.40; 45' & 46', +$1.50; 47' & 48', +$1.60; 49' & 50', +$1.70. Lengths: 51' & 52', +$1.80; 53' & 54', +$1.90; 55' & 56', +$2; 57' & 58', +$2.10; 59' & 60', +$2.20. Lengths: 61' & 62', +$2.30; 63' & 64', +$2.40; 65' & 66', +$2.50; 67' & 68', +$2.60; 69' & 70', +$2.70. Lengths: 71' & 72', +$2.80; 73' & 74', +$2.90; 75' & 76', +$3; 77' & 78', +$3.10; 79' & 80', +$3.20. Lengths: 81' & 82', +$3.30; 83' & 84', +$3.40; 85' & 86', +$3.50; 87' & 88', +$3.60; 89' & 90', +$3.70. Lengths: 91' & 92', +$3.80; 93' & 94', +$3.90; 95' & 96', +$4; 97' & 98', +$4.10; 99' & 100', +$4.20. Lengths: 101' & 102', +$4.30; 103' & 104', +$4.40; 105' & 106', +$4.50; 107' & 108', +$4.60; 109' & 110', +$4.70. Lengths: 111' & 112', +$4.80; 113' & 114', +$4.90; 115' & 116', +$5; 117' & 118', +$5.10; 119' & 120', +$5.20. Lengths: 121' & 122', +$5.30; 123' & 124', +$5.40; 125' & 126', +$5.50; 127' & 128', +$5.60; 129' & 130', +$5.70. Lengths: 131' & 132', +$5.80; 133' & 134', +$5.90; 135' & 136', +$6; 137' & 138', +$6.10; 139' & 140', +$6.20. Lengths: 141' & 142', +$6.30; 143' & 144', +$6.40; 145' & 146', +$6.50; 147' & 148', +$6.60; 149' & 150', +$6.70. Lengths: 151' & 152', +$6.80; 153' & 154', +$6.90; 155' & 156', +$7; 157' & 158', +$7.10; 159' & 160', +$7.20. Lengths: 161' & 162', +$7.30; 163' & 164', +$7.40; 165' & 166', +$7.50; 167' & 168', +$7.60; 169' & 170', +$7.70. Lengths: 171' & 172', +$7.80; 173' & 174', +$7.90; 175' & 176', +$8; 177' & 178', +$8.10; 179' & 180', +$8.20. Lengths: 181' & 182', +$8.30; 183' & 184', +$8.40; 185' & 186', +$8.50; 187' & 188', +$8.60; 189' & 190', +$8.70. Lengths: 191' & 192', +$8.80; 193' & 194', +$8.90; 195' & 196', +$9; 197' & 198', +$9.10; 199' & 200', +$9.20. Lengths: 201' & 202', +$9.30; 203' & 204', +$9.40; 205' & 206', +$9.50; 207' & 208', +$9.60; 209' & 210', +$9.70. Lengths: 211' & 212', +$9.80; 213' & 214', +$9.90; 215' & 216', +$10; 217' & 218', +$10.10; 219' & 220', +$10.20. Lengths: 221' & 222', +$10.30; 223' & 224', +$10.40; 225' & 226', +$10.50; 227' & 228', +$10.60; 229' & 230', +$10.70. Lengths: 231' & 232', +$10.80; 233' & 234', +$10.90; 235' & 236', +$11; 237' & 238', +$11.10; 239' & 240', +$11.20. Lengths: 241' & 242', +$11.30; 243' & 244', +$11.40; 245' & 246', +$11.50; 247' & 248', +$11.60; 249' & 250', +$11.70. Lengths: 251' & 252', +$11.80; 253' & 254', +$11.90; 255' & 256', +$12; 257' & 258', +$12.10; 259' & 260', +$12.20. Lengths: 261' & 262', +$12.30; 263' & 264', +$12.40; 265' & 266', +$12.50; 267' & 268', +$12.60; 269' & 270', +$12.70. Lengths: 271' & 272', +$12.80; 273' & 274', +$12.90; 275' & 276', +$13; 277' & 278', +$13.10; 279' & 280', +$13.20. Lengths: 281' & 282', +$13.30; 283' & 284', +$13.40; 285' & 286', +$13.50; 287' & 288', +$13.60; 289' & 290', +$13.70. Lengths: 291' & 292', +$13.80; 293' & 294', +$13.90; 295' & 296', +$14; 297' & 298', +$14.10; 299' & 300', +$14.20. Lengths: 301' & 302', +$14.30; 303' & 304', +$14.40; 305' & 306', +$14.50; 307' & 308', +$14.60; 309' & 310', +$14.70. Lengths: 311' & 312', +$14.80; 313' & 314', +$14.90; 315' & 316', +$15; 317' & 318', +$15.10; 319' & 320', +$15.20. Lengths: 321' & 322', +$15.30; 323' & 324', +$15.40; 325' & 326', +$15.50; 327' & 328', +$15.60; 329' & 330', +$15.70. Lengths: 331' & 332', +$15.80; 333' & 334', +$15.90; 335' & 336', +$16; 337' & 338', +$16.10; 339' & 340', +$16.20. Lengths: 341' & 342', +$16.30; 343' & 344', +$16.40; 345' & 346', +$16.50; 347' & 348', +$16.60; 349' & 350', +$16.70. Lengths: 351' & 352', +$16.80; 353' & 354', +$16.90; 355' & 356', +$17; 357' & 358', +$17.10; 359' & 360', +$17.20. Lengths: 361' & 362', +$17.30; 363' & 364', +$17.40; 365' & 366', +$17.50; 367' & 368', +$17.60; 369' & 370', +$17.70. Lengths: 371' & 372', +$17.80; 373' & 374', +$17.90; 375' & 376', +$18; 377' & 378', +$18.10; 379' & 380', +$18.20. Lengths: 381' & 382', +$18.30; 383' & 384', +$18.40; 385' & 386', +$18.50; 387' & 388', +$18.60; 389' & 390', +$18.70. Lengths: 391' & 392', +$18.80; 393' & 394', +$18.90; 395' & 396', +$19; 397' & 398', +$19.10; 399' & 400', +$19.20. Lengths: 401' & 402', +$19.30; 403' & 404', +$19.40; 405' & 406', +$19.50; 407' & 408', +$19.60; 409' & 410', +$19.70. Lengths: 411' & 412', +$19.80; 413' & 414', +$19.90; 415' & 416', +$20; 417' & 418', +$20.10; 419' & 420', +$20.20. Lengths: 421' & 422', +$20.30; 423' & 424', +$20.40; 425' & 426', +$20.50; 427' & 428', +$20.60; 429' & 430', +$20.70. Lengths: 431' & 432', +$20.80; 433' & 434', +$20.90; 435' & 436', +$21; 437' & 438', +$21.10; 439' & 440', +$21.20. Lengths: 441' & 442', +$21.30; 443' & 444', +$21.40; 445' & 446', +$21.50; 447' & 448', +$21.60; 449' & 450', +$21.70. Lengths: 451' & 452', +$21.80; 453' & 454', +$21.90; 455' & 456', +$22; 457' & 458', +$22.10; 459' & 460', +$22.20. Lengths: 461' & 462', +$22.30; 463' & 464', +$22.40; 465' & 466', +$22.50; 467' & 468', +$22.60; 469' & 470', +$22.70. Lengths: 471' & 472', +$22.80; 473' & 474', +$22.90; 475' & 476', +$23; 477' & 478', +$23.10; 479' & 480', +$23.20. Lengths: 481' & 482', +$23.30; 483' & 484', +$23.40; 485' & 486', +$23.50; 487' & 488', +$23.60; 489' & 490', +$23.70. Lengths: 491' & 492', +$23.80; 493' & 494', +$23.90; 495' & 496', +$24; 497' & 498', +$24.10; 499' & 500', +$24.20. Lengths: 501' & 502', +$24.30; 503' & 504', +$24.40; 505' & 506', +$24.50; 507' & 508', +$24.60; 509' & 510', +$24.70. Lengths: 511' & 512', +$24.80; 513' & 514', +$24.90; 515' & 516', +$25; 517' & 518', +$25.10; 519' & 520', +$25.20. Lengths: 521' & 522', +$25.30; 523' & 524', +$25.40; 525' & 526', +$25.50; 527' & 528', +$25.60; 529' & 530', +$25.70. Lengths: 531' & 532', +$25.80; 533' & 534', +$25.90; 535' & 536', +$26; 537' & 538', +$26.10; 539' & 540', +$26.20. Lengths: 541' & 542', +$26.30; 543' & 544', +$26.40; 545' & 546', +$26.50; 547' & 548', +$26.60; 549' & 550', +$26.70. Lengths: 551' & 552', +$26.80; 553' & 554', +$26.90; 555' & 556', +$27; 557' & 558', +$27.10; 559' & 560', +$27.20. Lengths: 561' & 562', +$27.30; 563' & 564', +$27.40; 565' & 566', +$27.50; 567' & 568', +$27.60; 569' & 570', +$27.70. Lengths: 571' & 572', +$27.80; 573' & 574', +$27.90; 575' & 576', +$28; 577' & 578', +$28.10; 579' & 580', +$28.20. Lengths: 581' & 582', +$28.30; 583' & 584', +$28.40; 585' & 586', +$28.50; 587' & 588', +$28.60; 589' & 590', +$28.70. Lengths: 591' & 592', +$28.80; 593' & 594', +$28.90; 595' & 596', +$29; 597' & 598', +$29.10; 599' & 600', +$29.20. Lengths: 601' & 602', +$29.30; 603' & 604', +$29.40; 605' & 606', +$29.50; 607' & 608', +$29.60; 609' & 610', +$29.70. Lengths: 611' & 612', +$29.80; 613' & 614', +$29.90; 615' & 616', +$30; 617' & 618', +$30.10; 619' & 620', +$30.20. Lengths: 621' & 622', +$30.30; 623' & 624', +$30.40; 625' & 626', +$30.50; 627' & 628', +$30.60; 629' & 630', +$30.70. Lengths: 631' & 632', +$30.80; 633' & 634', +$30.90; 635' & 636', +$31; 637' & 638', +$31.10; 639' & 640', +$31.20. Lengths: 641' & 642', +$31.30; 643' & 644', +$31.40; 645' & 646', +$31.50; 647' & 648', +$31.60; 649' & 650', +$31.70. Lengths: 651' & 652', +$31.80; 653' & 654', +$31.90; 655' & 656', +$32; 657' & 658', +$32.10; 659' & 660', +$32.20. Lengths: 661' & 662', +$32.30; 663' & 664', +$32.40; 665' & 666', +$32.50; 667' & 668', +$32.60; 669' & 670', +$32.70. Lengths: 671' & 672', +$32.80; 673' & 674', +$32.90; 675' & 676', +$33; 677' & 678', +$33.10; 679' & 680', +$33.20. Lengths: 681' & 682', +$33.30; 683' & 684', +$33.40; 685' & 686', +$33.50; 687' & 688', +$33.60; 689' & 690', +$33.70. Lengths: 691' & 692', +$33.80; 693' & 694', +$33.90; 695' & 696', +$34; 697' & 698', +$34.10; 699' & 700', +$34.20. Lengths: 701' & 702', +$34.30; 703' & 704', +$34.40; 705' & 706', +$34.50; 707' & 708', +$34.60; 709' & 710', +$34.70. Lengths: 711' & 712', +$34.80; 713' & 714', +$34.90; 715' & 716', +$35; 717' & 718', +$35.10; 719' & 720', +$35.20. Lengths: 721' & 722', +$35.30; 723' & 724', +$35.40; 725' & 726', +$35.50; 727' & 728', +$35.60; 729' & 730', +$35.70. Lengths: 731' & 732', +$35.80; 733' & 734', +$35.90; 735' & 736', +$36; 737' & 738', +$36.10; 739' & 740', +$36.20. Lengths: 741' & 742', +$36.30; 743' & 744', +$36.40; 745' & 746', +$36.50; 747' & 748', +$36.60; 749' & 750', +$36.70. Lengths: 751' & 752', +$36.80; 753' & 754', +$36.90; 755' & 756', +$37; 757' & 758', +$37.10; 759' & 760', +$37.20. Lengths: 761' & 762', +$37.30; 763' & 764', +$37.40; 765' & 766', +$37.50; 767' & 768', +$37.60; 769' & 770', +$37.70. Lengths: 771' & 772', +$37.80; 773' & 774', +$37.90; 775' & 776', +$38; 777' & 778', +$38.10; 779' & 780', +$38.20. Lengths: 781' & 782', +$38.30; 783' & 784', +$38.40; 785' & 786', +$38.50; 787' & 788', +$38.60; 789' & 790', +$38.70. Lengths: 791' & 792', +$38.80; 793' & 794', +$38.90; 795' & 796', +$39; 797' & 798', +$39.10; 799' & 800', +$39.20. Lengths: 801' & 802', +$39.30; 803' & 804', +$39.40; 805' & 806', +$39.50; 807' & 808', +$39.60; 809' & 810', +$39.70. Lengths: 811' & 812', +$39.80; 813' & 814', +$39.90; 815' & 816', +$40; 817' & 818', +$40.10; 819' & 820', +$40.20. Lengths: 821' & 822', +$40.30; 823' & 824', +$40.40; 825' & 826', +$40.50; 827' & 828', +$40.60; 829' & 830', +$40.70. Lengths: 831' & 832', +$40.80; 833' & 834', +$40.90; 835' & 836', +$41; 837' & 838', +$41.10; 839' & 840', +$41.20. Lengths: 841' & 842', +$41.30; 843' & 844', +$41.40; 845' & 846', +$41.50; 847' & 848', +$41.60; 849' & 850', +$41.70. Lengths: 851' & 852', +$41.80; 853' & 854', +$41.90; 855' & 856', +$42; 857' & 858', +$42.10; 859' & 860', +$42.20. Lengths: 861' & 862', +$42.30; 863' & 864', +$42.40; 865' & 866', +$42.50; 867' & 868', +$42.60; 869' & 870', +$42.70. Lengths: 871' & 872', +$42.80; 873' & 874', +$42.90; 875' & 876', +$43; 877' & 878', +$43.10; 879' & 880', +$43.20. Lengths: 881' & 882', +$43.30; 883' & 884', +$43.40; 885' & 886', +$43.50; 887' & 888', +$43.60; 889' & 890', +$43.70. Lengths: 891' & 892', +$43.80; 893' & 894', +$43.90; 895' & 896', +$44; 897' & 898', +$44.10; 899' & 900', +$44.20. Lengths: 901' & 902', +$44.30; 903' & 904', +$44.40; 905' & 906', +$44.50; 907' & 908', +$44.60; 909' & 910', +$44.70. Lengths: 911' & 912', +$44.80; 913' & 914', +$44.90; 915' & 916', +$45; 917' & 918', +$45.10; 919' & 920', +$45.20. Lengths: 921' & 922', +$45.30; 923' & 924', +$45.40; 925' & 926', +$45.50; 927' & 928', +$45.60; 929' & 930', +$45.70. Lengths: 931' & 932', +$45.80; 933' & 934', +$45.90; 935' & 936', +$46; 937' & 938', +$46.10; 939' & 940', +$46.20. Lengths: 941' & 942', +$46.30; 943' & 944', +$46.40; 945' & 946', +$46.50; 947' & 948', +$46.60; 949' & 950', +$46.70. Lengths: 951' & 952', +$46.80; 953' & 954', +$46.90; 955' & 956', +$47; 957' & 958', +$47.10; 959' & 960', +$47.20. Lengths: 961' & 962', +$47.30; 963' & 964', +$47.40; 965' & 966', +$47.50; 967' & 968', +$47.60; 969' & 970', +$47.70. Lengths: 971' & 972', +$47.80; 973' & 974', +$47.90; 975' & 976', +$48; 977' & 978', +$48.10; 979' & 980', +$48.20. Lengths: 981' & 982', +$48.30; 983' & 984', +$48.40; 985' & 986', +$48.50; 987' & 988', +$48.60; 989' & 990', +$48.70. Lengths: 991' & 992', +$48.80; 993' & 994', +$48.90; 995' & 996', +$49; 997' & 998', +$49.10; 999' & 1,000', +$49.20. Lengths: 1,001' & 1,002', +$49.30; 1,003' & 1,004', +$49.40; 1,005' & 1,006', +$49.50; 1,007' & 1,008', +$49.60; 1,009' & 1,010', +$49.70. Lengths: 1,011' & 1,012', +$49.80; 1,013' & 1,014', +$49.90; 1,015' & 1,016', +$50; 1,017' & 1,018', +$50.10; 1,019' & 1,020', +$50.20. Lengths: 1,021' & 1,022', +$50.30; 1,023' & 1,024', +$50.40; 1,025' & 1,026', +$50.50; 1,027' & 1,028', +$50.60; 1,029' &

A PUMP IS MEASURED BY MORE THAN DIMENSIONS

MORRIS Centrifugal PUMPS

for Rugged, Dependable,

Trouble-Free Operation

You get more from a Morris Pump than just correct "book design" measurements.

Built-in extra stamina to give outstanding performance even under adverse conditions.

Superior quality of material and proved hydraulic design assures longer life and continued dependability in all Morris Centrifugal Pumps.

Morris has a modern, well-instrumented slurry laboratory to solve, in advance, problems that may be encountered in a particular pumping application.

When you have a pumping problem . . . consult the Morris representative. He is well qualified to advise you in your pumping problems.

MORRIS
CENTRIFUGAL
PUMPS

MORRIS MACHINE WORKS BALDWINSVILLE, N. Y.
Sales Offices in Principal Cities
Export Office: 50 Church St., New York 7, N. Y.

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† R. I., Charlestown—AIRFIELD LIGHTING SYS.—BA 11/20—Officer in Charge of Constr., Pub. Wks. Office, Bldg. 438, U. S. Naval Air Station, Quonset Point, altering airfield lighting sys. at U. S. Naval Aux. Landing Field, Nby 19206, Spec. 19206/58. Plans deposit $10.

BUILDINGS—BA

Conn., Middletown—CAFETERIA—BA 11/19—State P. Wks. Comr., 165 Capitol Ave., Hartford, renovation of patients' cafeteria, Conn. State Hospital, Proj. BI-1-150.

Conn., Rocky Hill—BOILER PLANT—BA 11/19—State P. Wks. Comr., 165 Capitol Ave., Hartford, boiler plant addns., improvs., Rock Hill State Veterans Home and Hospital, Proj. BI-C107-A. CD 1/21/57.

Conn., Storrs—PHARMACY WING—BA 11/19—State P. Wks. Comr., 165 Capitol Ave., Hartford, 3 story, 60 x 60 ft., brick, concrete Life Science Bldg., Pharmacy Wing, Univ. of Conn., Proj. BI-D-213 B. $350,000. Plans deposit $25. Golden, Storrs & Co., 1232 Farmington Ave., West Hartford, archts. A. John Macchi, 57 Farmington Ave., Hartford, engr. CD 5/28.

Conn., Westbrook—BARRACKS—BA 11/19—State P. Wks. Comr., 165 Capitol Ave., Hartford, State Police Barracks and garage, Spencer Plains Rd., Proj. BI-N-42. $348,200. Plans deposit $25. Olson & Miller, 742 Asylum Ave., Hartford, archts. Jerome F. Mueller, 15 Lewis St., Hartford, engr. CD 3/27.

† Vt., Chester—ARMY RESERVE TRAINING CENTER—BA 11/20—U. S. Eng., 424 Trapelo Rd., Waltham 54, Mass., constr. Army Reserve Training Center, ENG-19-016-59-458. Joseph L. Paivy, 101 Newbury St., Boston, Mass., consult. engr. CD 10/23.

Conn., Danbury—SCIENCE—BA 11/26—State P. Wks. Comr., 165 Capitol Ave., Hartford, enlarge science bldg., Danbury State Teachers College, Proj. BI-R-157. $649,000. Plans deposit $25. Francis L. S. Mavers, 482 Summer St., Stamford, archt. CD 9/27/57.

HEAVY CONSTRUCTION—LB & CA

Cudemo-Clark Constr. Co., Inc., 327 Trumbull St., Hartford, Conn., LB $111,565 (7 bidders) 11,000 sq. ft. 272,000 gal. rein.-con. swimming pool, bathhouse and skating shelter, Mill Pond, NEWINGTON, CONN. Town of Newington, Bldg. Comm., 1078 Main St., Newington, Conn. Bids Oct. 21. CD 11/16.

BUILDINGS—LB & CA

▲ George L. Hickey Constr. Co., 13 Spring St., Stamford, Conn., LB $1,230,000 (12 bidders) Cranbury and Fox ELEMENTARY SCHOOLS, NORWALK, CONN. Town, City Clerk, City Hall, South Norwalk, Conn. Bids Oct. 21. CD 10/10.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ N. J., Linden—BA 12/2—Common Council of the City of Linden, Francis H. Dann, city clk., constr. storm drain, appurtenances in connection with Contr. 2 of storm drainage relief proj., Eighth Ward. Plans deposit $40. Alexander Potter Associates, 50 Church St., New York, N. Y., consult. engrs. CD 10/7/57.

BUILDINGS—BA

Pa., Phila.—HOUSE OF CORRECTION—BA 11/17—Dpt. Procurement, City Hall Annex, Bid 4112, general constr. House of Correction. Plans deposit $10. CD 9/13/51.

Pa., Phila.—FIRE STATION—BA 11/17—Dpt. Procurement, City Hall Annex, Bid 4590 general constr. Bid 4591, plumbing. Bid 4592, heating and ventilating. Bid 4593, electrical for erection fire station, 43 and Market Sts. Plans deposit $25. CD 2/3/47.

▲ N. Y., Mount Kisco—HOSPITAL—BA 11/25—Northern Westchester Hospital, E. Main St., 2 story hospital addn. $1,000,000. Rogers & Butler, 219 E. 44 St., archt. CD 10/30/56.

† Pa., Pottsville—TRAINING CENTER—BA 11/25—U. S. Eng., Worth and Maryland Aves., Baltimore 18, Md. constr. Army Reserve Training Center, ENG-18-020-59-68.

BUILDINGS—SLC

N. J., Madison—SCHOOL—Diocese of Newark and Parish of St. Vincent, 26 Green Village Rd., soon lets contract, school, Green Village Rd. $600,000. Robert Moran, 642 Eagle Rock Rd., West Orange, archt.

HEAVY CONSTRUCTION—LB & CA

DeFeo Constr. Corp., 689 E. 234 St., Bronx 66, N. Y. CA (A) $153,695 (B) $156,232 (7 bidders) reconstr. playground adjacent to P. S. 99 from Stebbins to Intervale Aves., between E. 167 and E. 169 Sts., Constr. No. X-116-157, Bronx Boro NEW YORK, N. Y. Comr. Parks, Arsenal Bldg., Central Park, 64 St. and 5th Ave., New York 21, N. Y. Bids Oct. 30. CD 10/22.

Queens Structure Corp., 32-57 57th St., Woodside, N. Y. CA $659,292, reconstr. Riverside Dr. Viaduct, W. 153 St. to 155 St., Contr. 387, Manhattan Boro, NEW YORK, N. Y. President Manhattan Boro, Municipal Bldg., New York 7, N. Y. CD 8/28, under LB.

C.M.H. Co., Inc., 11 Tristan Lane, Buffalo 21, N. Y. CA $112,125, 4,200 ft. outfall sewer in Cazenovia Park, WEST SENECA, N. Y. Town of West Seneca, Town Hall, West Seneca, N. Y. Bids Oct. 20. CD 10/13.

BUILDINGS—LB & CA

Saruhbi Const. Co., 415 64 St., West New York, N. J. CA $500,000, 2 story, brick, steel RESIDENCE for Christian Brothers, Broadway and 54 Sts., WEST NEW YORK, N. J. St. Joseph of the Palisades, 320 64 St., West New York, N. J., CD 7/8.

Prime Constr. Co., 40 Eastern Parkway, Hillside, N. J. Owner Builds, $750,000, 24 HOUSES, Northfield Ave., WEST ORANGE, N. J.

Boyd H. Kline, Bloomsburg, Pa. LB $528,777, general constr. Women's DORMITORY BLDG. for East Stroudsburg State Teacher's College, EAST STROUDSBURG, PA. General State Auth., 18th and Herr Sts., Harrisburg, Pa. Bids Oct. 29. CD 10/1.

▲ John Tester & Son, Clinton, Md. CA $1,887,700. constr. Glendale HIGH SCHOOL, Glendale, MARLBORO, MD. Prince George's Co. Bd. Educ., Marlboro, Md. Bids Oct. 27. CD 10/29, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

† Ga., Albany—APRON etc.—BA 11/25—U. S. Eng., 200 East St., Julian St., apron, operational, alert, Turner Air Force Base, ENG-09-133-59-17. CD 10/28.

† Ga., Savannah—APRONS—BA 11/28—U. S. Eng., 200 E. St. Julian St., alert aprons and overun apron and Readiness Crew Bldg. at Hunter Air Force Base, ENG-09-133-59-13. CD 10/24.

BUILDINGS—BA

† Tenn., Oak Ridge—WATER DISTRIBUTION SYS. EXTEN.—BA About 11/25—U. S. Atomic Energy Comm., P. O. Box E, ATTEN: R. J. Dunbar, Area Constr. Division, installation water distr. sys. exten. for Oak Ridge Gaseous Diffusion Plant, Inv. 401-59-4A. Plans deposit $20.

PROJECTS COVERED
By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

† Ala., Huntsville—RESERVE TRAINING CENTER—BA 11/27—U. S. Eng., P. O. Box 1169, Mobile, constr. Army Reserve Center, ENG-01-076-59-36B. CD 10/24.

Miss., Ellisville—SCHOOL—BA 12/30—Jones Co. School Bd., Court House, 1 story, 42,000 sq. ft. Roosevelt School, $352,000. Bill Archer, 204 Kidder Bldg., Jackson, archt.

HEAVY CONSTRUCTION—LB & CA

▲† C. J. Langenfelder & Son, Inc., 8427 Pulaski Hy., Baltimore 24, Md. CA $5,847,645, grading, drainage, and related work, Washington International Airport, CHANTILLY, VA. Civil Aeronautics Admin., Room 2615-T-5 Bldg., 16th and Constitution Ave. N.W., Wash., D. C. Bids Sept. 24. CD 10/10, under LB.

Peden Constr. Co., 52 May St., Box 1836, Greenville, S. C. CA $221,000, grading, paving roads in new industrial area in Bush Field vicinity, AUGUSTA, GA. Bd. Comrs., Richmond Co., Augusta, Ga.

MISSISSIPPI—State Hy. Dpt. T. C. Robbins, dir., Jackson.

Miss.—Dixie Contractors, Inc., 2965 S. 3, Memphis, Tenn., CA $112,740, est. $110,000 bridge on Miss. Hy. No. 4, between New Site and Dennis, 0.046 mi. Proj. S-0953(7) A, Contract II, Tishomingo Co., CA $76,924, est. $85,000, constr. bridges hydraulic and separation structures on Miss. Hy. No. 364 between Cairo and Midway, SG-0964(3) Contr. II and DS-0965(4). A Contr. II, Prentiss and Tishamingo Counties;

Miss.—O. J. Stanton & Co., Box 731 Greenwood Miss., CA $721,923 0.167 mi. bridges on Interstate Hy. 55, between Yalabusha-Panola Co. line and Courtland, Proj. I-091-4(12) (old) 1-55-4(12)231 (new) Contr. II Panola Co. Grand total $911,587. Bids Oct. 28. CD 10/16.

MISSISSIPPI—State Hy. Dpt., R. C. Robbins, dir. Jackson,

cancelled bids to have been opened Oct. 28, 1.087 mi. grading, draining, culverts base, double bit. surf. treat., concrete pavement, grade separation structures on Interstate Hy. No. 55, in Jackson, Proj. No. I-091-2(13) (old) I-55-2(14) 98 (new). Hinds Co., $855,000. Will re-advertise.

▲ MISSISSIPPI—State Hy. Dpt., T. C. Robbins, Jackson,

Miss.—O. J. Stanton & Co., Box 731, Greenwood, Miss., CA $727,029 est. $932,000 grading, draining, culverts, 6.065 mi. Interstate Hy. No. 55, Proj. I-091-4(12) (old) I-55-4(12) 231 (new) Contr. I and S-0836(3)A Panola Co., CA $255,967 est. $285,000 grading, drainage, culverts and box bridges 5.918 mi. Miss Hy. No. 315 Proj. DS-0791(3) Contract I Yalobusha and Lafayette Counties; CA $134,108 est. $150,000 grading, drainage, culverts box bridges, and temp. gravel surf. course 4.925 mi. Miss. Hy. 21 Proj. DS 0435(5)A Scott, Newton and Neshoba Counties;

Miss.—Dixie Contractors, Inc., 2965 S. 3 St., Memphis, Tenn., CA $227,781, est. $205,000 grading, drainage, culverts and base 8.796 mi. Miss. Hy. No. 304 Miss. Hy. Proj. No. DS-0904(6)A DeSoto Co.; CA $208,253, est. $255,000, grading, drainage, culverts and box bridges 4.306 mi. Miss. Hy. No. 4, Miss. Hy. Proj. No. S-0953(7)A, Contract 1, Prentiss and Tishomingo Counties;

Miss.—Aline Goolsby, Ripley, Miss., CA $122,141, est. $160,000 grading, drainage, culverts and topping 6.125 mi. Miss. Hy. No. 311, Miss. Hy. Proj. DS-0917(3)A, Contract I, Marshall Co.; CA $287,482, est. $370,000, grading, drainage, culverts and box bridge 7.447 mi. Miss. Hy. No. 364 Miss. Hy. Proj. SG-0964(3)A, Contr. 1 and DS-0964(4)A, Contr. 1, Prentiss and Tishomingo Counties;

Miss.—Phillips Contg. Co., Box 723, Columbus, Miss., CA $177,255 est. $195,000, grading, drainage, base, double bit. surf. treat., box bridge and bridge, 0.876 mi. US Hy. 45 Miss. Hy. Proj. F-002-4(8) Monroe Co.;

Miss.—Valley Contg. Co., Box 156, Aberdeen Miss., CA $249,859 est. $250,000, grading, drainage, culverts and temp. gravel surf. courses 5.956 mi. Miss. Hy. 47, Miss. Hy. Proj. S-0743(3)A, Clay Co.;

Miss.—John H. Moon & Sons, Box 382, Ridgeland, Miss. CA $165,446, est. $175,000 grading, drainage, bridge base and double bit. surf. treat. 0.371 mi. Miss. Hy. No. 429, Miss. Hy. Proj. No. S-0656(2)A, Holmes and Attala Counties;

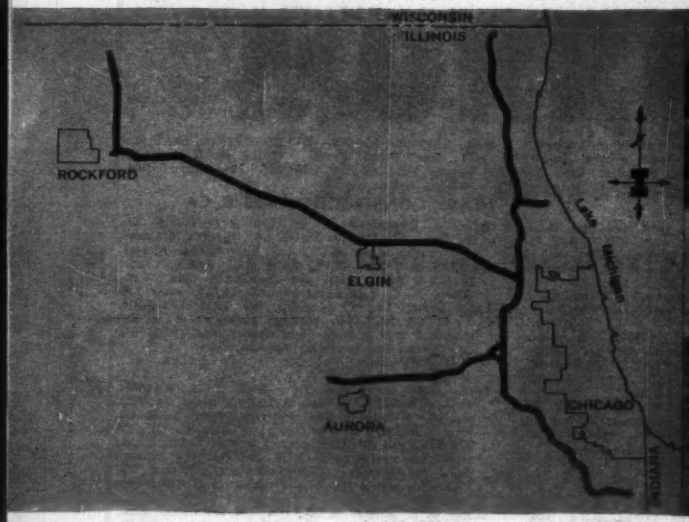
Miss.—A. A. Bush Contractor, Box 826, Laurel, Miss., CA $137,507, est. $160,000, grading, drainage, culverts and topping 4.934 mi. Miss. Hy. No. 531, Miss. Hy. No. DS-0335 (5) A and S-0335 (6) A, Smith and Jasper Counties;

Miss.—Mid-State Paving Co., Lamar Bldg., Meridian, Miss., CA $133,056, est. $152,000, grading, drainage, culvert and topping 4.908 mi. Miss. Hy. No. 583, Miss. Hy. Proj. DS-0182 (1) A, Contract I, Lincoln Co.;

Miss.—J. A. Hadley Constr. Co., Humboldt, Tenn., CA $108,260, est. $125,000, grading, drainage, culverts and bridge 2.423 mi. Miss. Hy. No. 304, Miss. Hy. Proj. DS-0904 (9) A, Tunica Co. Grand total $2,934,-175. Bids Oct. 28. CD 10/16.

Paul E. Riviere, 17th Canal, New Orleans, La., LB $480,318 (7 bidders), Contr. 5818, water main addns., extensions and installation house service

(Continued on page 97)



Map showing various sections of Northern Illinois Tollway under construction and linking Indiana, Illinois and Wisconsin.

Completed stretch of Northern Illinois Tollway near Elgin.

Illinois Tollway loops the loop

with the help of Tiger Brand Wire Rope, of course!

LOOPING a four- and six-lane highway around the city of Chicago is a tremendous engineering feat . . . but the Illinois Tollway goes even farther. It includes about 200 miles of interconnected highways that will link the Indiana Toll Road with a by-pass of Chicago, and give quick access to Milwaukee and Madison, Wisconsin, and Aurora, Illinois. The total estimated cost is around 441 million dollars.

To get the job done quickly, 42 contracts were let for 50 construction sections. Contractors have moved approximately 73 million cubic yards of earth with shovels, draglines, scrapers and other equipment.

For all of these tough lifting jobs, wire rope supplies the mechanical "muscles." And USS Tiger Brand is widely used. This rugged wire rope is built to take the beating it gets on rush construction work. Contractors have found they get longer service life and less down time when they rig up with Tiger Brand. This means lower wire rope costs.

What's more, you can get Tiger Brand Rope designed to fit any piece of construction equipment . . . and there's a Tiger Brand field service engineer ready to help you choose the best rope for the job. Why not take advantage of this free service for your equipment? Call our local wire rope distributor, or write to American Steel & Wire, 614 Superior Ave., N. W., Cleveland 13, Ohio.

USS, Tiger Brand and Super-Tens are registered trademarks

American Steel & Wire Division of USS **United States Steel**

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors • United States Steel Export Company, Distributors Abroad

Dragline equipped throughout with Tiger Brand Wire Rope, to keep it on the job longer with fewer rope changes. Note the prestressed concrete bridge, which is one of many prestressed with American Super-Tens Stress-Relieved Strand.

Other notable jobs using USS Tiger Brand Wire Rope

New Fort Pitt Bridge. Built with 8960 feet of USS Tiger Brand Wire Rope suspenders, 3¼ inches in diameter. One of the few double-deck, tied-arch bridges in existence. Soon you can cross Pittsburgh in 30 minutes.

St. Lawrence Seaway. One of the biggest construction jobs of all time. Huge quantities of Tiger Brand Wire Rope were used throughout for cranes, shovels, draglines and other equipment.

UNIT CRANE & SHOVEL CORP.
UNIT
MILWAUKEE WISCONSIN

simple controls

for Easy Operation!

The job of laying underground water conduit on a western earth moving project was quickly and easily performed with this UNIT Challenger 513C Trenchoe . . . *in spite of an inexperienced operator.* Previously, he had only handled a tractor-mounted back hoe, but with the handling ease of UNIT, he became a proficient operator in a very short time. The FULL VISION CAB, hydraulic actuated clutches, finger tip controls and other exclusive UNIT features enabled him to handle the job with speed and safety. Get all the facts.

Write today for literature.

6315 W. Burnham St., Milwaukee 19, Wisconsin, U.S.A.

A8-5022

(Continued from page 93)

connections, incl. pumping station at Toca, CHALMETTE, LA. St. Bernard Parish Water Dist. No. 2, Chalmette, La. Bids Oct. 21. CD 10/1.

T. L. James & Co., Box 531, Ruston, La., LB $139,675 (2 bidders), embankment, drainage, soil cement base, b. conc. paving 1.558 mi. River Rd. between Oak St., GRETNA, LA. Jefferson Parish Council, New Courthouse Bldg., Gretna, La. Bids Oct. 23. CD 10/2.

▲ KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort,

J. B. Michael & Co., Inc., P. O. Box 5895, Memphis 4, Tenn., CA $2,698,133, high type surf. 4.412 mi. Paducah-Benton Rd. from junction of bridge and Redder Sts. in Paducah extending southeasterly to point U. S. 62 approx. 0.15 mi. northeast of Reidland, F-163 (10) FG-163 (11) and F-58 (9) SP 73-32 & SP 73-432, McCracken Co. CD 10/8, under LB.

BUILDINGS—LB & CA

Ruscon Constr. Co., 149 E. Bay St., Charleston, S. C. LB $518,460, BANK-OFFICE, AIKEN, S. C. Aiken Federal Savings & Loan Assn., Aiken, S. C.

Daniel Constr. Co., 429 N. Main, Greenville, S. C. CA $300,000, distr. WAREHOUSE, AUGUSTA, GA. S. H. Kress & Co., 114 5th Ave., New York, N. Y.

Dunn Constr. Co., 2058 3 Ave. N., Birmingham, Ala., LB $557,757, MFG. PLANT, OFFICE, BIRMINGHAM, ALA. Simon & Mogliner, 216 S. 29 St., Birmingham, Ala.

▲ F. W. Owens Co., 119 N. 5th St., Louisville 2, Ky. CA $1,436,000, 4 story block OFFICE, Chestnut St. between 6th St. and Armory Pl., LOUISVILLE, KY. Standard Gravure Corp., 525 W. Broadway, Louisville, Ky. Bids Oct. 23, awarded Oct. 24. CD 10/27, under LB.

Griffin Co., 500 Bergmann St., Louisville, Ky. CA $644,670, heating, air-conditioning, ventilation and refrigeration of office (Louisville, Ky.).

MIDDLE WEST

BUILDINGS—BA

O., Kettering—SCHOOL—BA 11/25—Bd. Educ., 4001 Ackerman Blvd., Zone 29, 1 story Ernst Grade School, Marshall Rd. Plans deposit $50. Rial T. Parrish, Knott Bldg., Dayton, archt. CD 11/12/57.

HEAVY CONSTRUCTION—LB & CA

▲ INDIANA—State Hy. Dpt., John Peters, chn., State House Annex, Indianapolis, Bids opened 10/28,

Ind.—Traylor Bros., Inc., Upper Mount Vernon Rd., Evansville, Ind., LB $2,061,031, est. $2,276,720, (8 bidders) c. conc. pavement, R-4594 I-03-2(19) I-03-2(23), Jackson Co.;

Ind.—McDougal Hartman Co., 3101 N.E. Adams St., Peoria, Ill., LB $1,387,703, est. $1,590,738, (6 bidders), c. conc. pavement, R-4567 I-05-1(14), Fountain Co.;

Ind.—Moellering Constr., Engle Rd., Fort Wayne, Ind., LB $366,454, est. $374,131 (3 bidders) c. conc. pavement, bit. resurf., R-4573 U-365(9) F-365(10), Allen Co.;

Ind.—Fauber Constr. Co., N. 9 St. Rd., Lafayette, Ind., LB $315,791, est. $385,464 (5 bidders) concrete base wid'n., bit. resurf., RS-4596 DF-191(12), Montgomery Co. CD 10/15.

▲ INDIANA—State Hy. Dpt., John Peters, chn., State House Annex, Indianapolis, Bids opened 10/28,

Ind.—Traylor Brothers, Inc., Upper Mount Vernon Rd., Evansville, Ind., LB $117,469, est. $138,115, (11 bidders), Bridge Contr. 4535, Fountain Co.; LB $146,308, est. $159,305, (5 bidders), Bridge Contr. No. 4586, Vermillion Co.; LB $583,231, est. $662,780, (6 bidders), Bridge Contr. No. 4587, Clark and Floyd Counties.

Ind.—Gradie Brothers, Inc., Carmel, Ind., LB $98,478, est. $109,565, (2 bidders), Bridge Contr. No. 4501, Jefferson Co.;

Ind.—Ruckman & Hansen, Inc., 3617 N. Clinton St., Fort Wayne, Ind., LB $283,989, est. $338,235, (12 bidders), Bridge Contr. No. 4590, Grant Co.;

Ind.—A. T. Gravelle, 3815 Massachusetts Ave., Indianapolis, Ind., LB $98,678, est. $124,480, (9 bidders), Bridge Contr. No. 4591, Marion Co.;

Ind.—J. L. Wilson, Bloomfield, Ind., LB $68,042, est. $76,522, (6 bidders), Bridge Contr. No. 4592, Parke Co. CD 10/15.

▲ WISCONSIN-MINNESOTA—State Hy. Comm., State Office Bldg., Madison, Wis.,

Kansas City Bridge Co., 928 Broadway, Kansas City, Mo., and Johnson, Drake & Piper, Inc., Baker Bldg., Minneapolis, Minn. (jointly), CA $1,859,628, constr. Duluth-Superior Interstate Bridge, Proj. I-35-3(18) 262, St. Louis Co., Minn., and Douglas Co., Wis., Bids Oct. 28. CD 10/31, under LB.

BUILDINGS—LB & CA

Miletti Constr. Co., 2473 State St., Akron, O., CA general contract, MOTOR FREIGHT TERMINAL and OFFICES, on 19 acre site, corner Rts. 176 and 21, West Richfield, AKRON, O. Bender & Loudon Motor Freight, Inc., 184 E. Buchtel Ave., Akron O. Total est. over $500,000, J. E. Holland, 26 E. Tallmadge, Akron, O., archt. CD 5/16;

Middleton Plumbing Co., 400 E. Cuyahoga Falls Rd., Akron, O., CA, plumbing, heating, ventilating, air-conditioning, motor freight terminal and offices (Akron, O.);

John P. Novatny Electric Co., Inc., 165 E. Thornton, Akron, O., CA, electrical contr., motor freight terminal and offices (Akron, O.).

Prochnal, Cruse & Vesseley, 308 S. Court St., Crown Point, Ind., CA $540,000, 45 HOMES, Oak Heights Subdivision, CROWN POINT, IND. Fleming & Kurtz, 216 E. Joliet St., Crown Point, Ind. CD 10/6.

▲ Hellrung Constr. Co., 101 Cherry St., Alton, Ill. LB $1,853,000, est. $1,700,000 (4 bidders) 4 story, 64 bed wing addn., alterations to present 150 bed hospital, ALTON, ILL. Alton Memorial Hospital, Memorial Dr., Alton, Ill. Bids Oct. 28. CD 9/15.

Community Builders, Inc., 4101 Dempster St., Morton Grove, Ill. Own Forces $400,000, 15 HOMES, 8900 block Natoma Ave., MORTON GROVE, ILL. A. J. Del Bianco, 5501 W. Irving Park Rd., Chicago, Ill., archt.

A B C Constr. Corp., 6024 N. Winchester Ave., Chicago, Ill., CA $885,000, 60 HOMES, incl. bit. paving, Dundee and Wolf Rds., WHEELING, ILL. Northbrook Realty Co., 1900 Shermer Ave., Northbrook, Ill.

T.V. John & Son, 13555 W. Juneau Blvd., Elm Grove, Wis., CA Est. $500,000, TRUCK SERVICE GARAGE and PLANT addn., MILWAUKEE, WIS. Golden Guernsey Dairy Co., 2206 N. 30 St., Milwaukee, Wis. Chas. Yoder & Assocs., 3505 W. Center St Milwaukee, Wis., engrs.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲† Okla., Clinton—APRON, OPERATIONAL ALERT and UTILITIES—BA 11/20—Officer in Charge of Construction, Eighth Naval Dist., Bldg. 16, U.S. Naval Station, New Orleans (Algiers) La., apron, operational alert and utilities, Clinton-Sherman Air Force Base, Foss, Nby 19818, Spec. 19818/58. $1,000,000. CD 9/9.

BUILDINGS—BA

† N. M., Las Vegas—ARMY RESERVE TRAINING CENTER—BA 12/2—U.S. Eng., Box 1538, Albuquerque, Army Reserve Training Center, ENG-29-005-59-468, CD 10/29.

HEAVY CONSTRUCTION—LB & CA

Irving Jensen Co., 3801 Country Club Blvd., Sioux City, Iowa, LB $111,229, est. $113,235 (1 bidder), paving, etc. Forest View Ave., south from W. Riverside Ave., SIOUX CITY, IOWA. City, City Hall, Sioux City, Iowa. Bids Oct. 6.

William H. & Nelson Cunliff Constr. Co., 3320 Lindell Blvd., St. Louis, Mo., CA $500,000, 2 story, 15,500 sq. ft. rein.-con., steel, Radio Station KMOX, Hampton and Wise Aves., ST. LOUIS, MO. Columbia Broadcasting System, 906 Sidney St., St. Louis, Mo. CD 4/25/57.

Buckley Constr. Co., 4604 Gravois Ave., St. Louis 16, Mo. LB $513,377, est. $840,000 (15 bidders) general contr. brick, concrete, stone, steel, etc. David P. Wohl community and recreational center, incl. ground

with **STEELCRAFT** standard steel buildings

You want to build to meet your needs. But estimates for "conventional" construction range from $8-$10 per sq. ft. What do you do if your building budget won't stretch? Take less space than you need? Take the space but forego the functional or esthetic refinements? Forget it altogether?

You need not accept any of these uncomfortable alternatives if you think in terms of a Steelcraft building. Within your reasonable budget—as low as $2.50 per sq. ft. completely erected including foundation and floors—you can obtain exactly the building you need and want—fast.

Standardization permits quick delivery and fast erection at only a fraction of the usual material and labor cost. And, with the money saved on your basic building, you can afford to be particular about architectural detail.

New York City Office, 342 Madison Ave., Phone OXford 7-6817

Find out about Steelcraft's new Finance Plan that allows you to pay for your building in low monthly installments.

mail this coupon now

New York City Office
342 Madison Ave.

The STEELCRAFT Manufacturing Co.
9017 Blue Ash Road Dept. 6-1113
Cincinnati 42, Ohio

Send me your new 20-page Standard Steel Building Catalog describing building types, construction details, and applications.

Name_____
Company_____
Street_____
City_____ State_____

floor, bsmnt. and mezzanines, etc. ST. LOUIS, MO. City of St. Louis, Bd. P. Service, 304 City Hall, St. Louis 3, Mo. Bids Oct. 28. CD 10/7.

▲ **SOUTH DAKOTA**—State Hy. Dpt., Pierre, Bids opened 10/28.

S. D.—**Rand Constr. Co.**, 636 St. Anne, Rapid City, S. D. LB $408,257 (10 bidders) Group No. 6, I 90 to East of Rapid City, twin 119 ft. continuous concrete bridge twin 119 ft. continuous concrete bridge 271 ft. 9 in. I beam viaduct, 365 ft. 3 in. box girder bridge, 254 ft. continuous concrete bridge, 190-2 (4) 54, Pennington Co.; LB $233,737 (12 bidders) Group 3 twin 306 ft. continuous concrete bridges, 270 ft. I-beam viaduct, I 90-2 (4) 54, Pennington Co.;

S. D.—**Highway Constr. Co.**, 613 9th St., Rapid City, S. D. LB $384,629 (8 bidders) Group No. 5 I 90 and spur from north co. line to east or Rapid City 324 ft. continuous concrete bridge 166 ft. continuous concrete bridge, 20 ft. continuous concrete bridge, 184 ft. continuous concrete bridge, I 90-2 (4) 54 & LA 90-2 (9) 59, Pennington Co.;

S. D.—**Central Contg. Co.**, Deadwood Rd., Rapid City, S. D. LB $392,146 (11 bidders) Group No. 4 L 90 & Spur from North Co. line to east of Rapid City, 421 ft. I beam viaduct, 394 ft. I beam viaduct, retaining walls, Pennington Co.;

S. D.—**Graves Bros. Constr. Co.**, Melvin, Iowa, LB $446,834 (13 bidders) Structures I 90 from Black Hawk to Pennington Co. line I 90-1 (3) O. Group 1 twin 594 ft. plate girder viaducts, Meade Co.;

S. D.—**Moore Constr. Co.**, 911 Clark St., Rapid City, S. D. LB $206,492 (14 bidders) Group 2, 223 ft. 6 in. I beam viaduct; 201 ft. 6 in. I beam viaduct; 254 ft. continuous concrete bridge; twin 54 ft. continuous concrete bridges. Meade Co. CD 9/24.

▲ **SOUTH DAKOTA**—State Hy. Dpt., Pierre, Bids opened 10/28.

S. D.—**Highway Constr. Co.**, 613 9th St., Rapid City, S. D. LB $1,939,418 (7 bidders) grading, subbase, fencing, etc. 12.192 mi. I 90 from Black Hawk to E. of Rapid City and Spur, I 90-1 (3) O, 190-2 (4) 54 & I A90-2 (9) 59, Meade and Pennington Counties.

S. D.—**Art Schimkat Constr. Co.**, Pierre, S. D., LB $214,053 (8 bidders) grade, subbase, etc. 12.203 mi SD 20 from Hoven to east county line, DF 042-1(1) Potter Co.

S. D.—**Dave Gustafson & Co., Inc.**, 502 E. 6th St., Sioux Falls, S. D. LB $178,603 (7 bidders) grade, etc. 10.972 mi. North co. line south, DF 033-1(1) Lyman Co.;

S. D.—**Northwestern Engineering Co.**, 1311 St. Joe St., Rapid City, S. D. LB $2,395,238 (8 bidders) concrete paving, etc. 12.192 mi. from Black Hawk to East of Rapid City and Spur, I 90-1 (3)O, I 90-2 (4) 54 & I A 90-2 (9) 59, Meade and Pennington Counties.

S. D.—**Central Contg. Co.**, Deadwood Rd., Rapid City, S. D. LB $372,692. (8 bidders), subbase, concrete pavement and box culverts 1.465 mi. Intersection SD 34 and SD 19 East and South, F 020-7 (1) & F 053-4 (1) Lake Co.;

S. D.—**Delzer Constr. Co.**, Selby, S. D. LB $122,752 (10 bidders) grading, subbase, etc. 6.492 mi. West Co. line to Onake, DF 042-2 (1), Faulk Co.;

S. D.—rejected bids Oct. 28, grading, subbase, surf., etc. 2.946 mi. Missouri River Bridge in Yankton North, F 051 (1) & U 051-1 (2), Yankton Co. CD 9/24.

BUILDINGS—LB & CA

Tunicliff-MacDonald, 3429 Miller St., Davenport, Iowa, CA est. $350,000, CHOW MILL, OFFICE, BOILER ROOM, WAREHOUSE, OTTUMWA, IOWA, Ralston Purina Co., 835 S. 8 St., St. Louis, 2, Mo., Bids Oct. 10. CD 9/10.

▲ **McCarthy Bros. Constr. Co.**, 4903 Delmar Blvd., St. Louis 8, Mo. LB $4,713,940, (3 bidders) general constr. two 9 story, one 8 story and one 12 story building for HOUSING Proj. MO-1-74 and remodeling boiler plant in Proj. MO-1-2 between 12th Blvd., 14th St., Chouteau and Lafayette Aves., ST. LOUIS, MO. St. Louis Housing Auth., 2031 Olive St., St. Louis 3, Mo. Bids Oct. 28. CD 9/17;
Thomas J. Sheehan Co., 2233 Olive St., St. Louis 3, Mo. LB $768,977, heating (St. Louis Mo.);
Gartland Co., Inc., 2012 Big Bend, St. Louis 19, Mo. LB $689,687, plumbing (St. Louis Mo.);
E. J. Fischer, 4134 Westminster Pl., St. Louis 8, Mo. LB $889,600, combination bid, plumbing and utilities, (St. Louis, Mo.);
The Corrigan Co., 2525 St. Louis Ave. St. Louis 7, Mo. LB $1,578,811, combination bid, plumbing and heating (St. Louis, Mo.)

FAR WEST

HEAVY CONSTRUCTION—BA

† **Idaho**—BA 11/25—Bureau Reclamation, Dpt. Interior, Carey, clearing Little Wood River Reservoir site, Little Wood River Proj., approx. 9 to 12 mi. northwest of Carey, Blaine Co., Spec. No. 100C-341. CD 9/17/57.

† **California**—ADMINISTRATIVE FACILITIES—BA 12/2—U. S. Eng., 751 S. Figueroa St., Los Angeles, administrative facilities, AAA Site, Los Angeles, Los Angeles Co., LA96L, ENG-04-353-59-24. $250,000.

† **Wash., Spokane**—TAXIWAY—BA 12/2—U. S. Eng., 1519 S. Alaskan Way, Seattle, Zone 4, grading, paving with c. conc. and b. conc. runway access taxiway, Fairchild Air Force Base, ENG-45-108-59-28. CD 9/9.

† **Calif., Point Mugu**—SUPPLY DEPT. FACILITY—BA 12/2—Eleventh Naval Dist., 1220 Pacific Hy., San Diego, constr. supply dept. facility, shops, cafeteria at Naval Missile Facility, Point Arguello, Spec. 19494-58. $250,000-$500,000. CD 9/17/57.

HEAVY CONSTRUCTION—LB & CA

F. H. Gagosian, 3986 S. Mt. Olympus Way, Salt Lake City, Utah. LB $103,652, curb, gutter and drainage facilities, Imprvt. Dist. No. 9 SALT LAKE CITY, UTAH. South Salt Lake City Council, City Hall, South Salt Lake City, Utah. Caldwell, Richards & Sorensen, 408 Zions Savings Bldg., Salt Lake City, Utah, engrs. Bids Oct 13.

† **Bureau Reclamation, Dpt. Interior**, Ephrata, Wash., cancelled bids to have been opened Nov. 13, discharge lines for Lake Lenore ground water interception works and for Soap Lake well X, Columbia Basin Proj. Spec. 117C-525, WASHINGTON. CD 10/24.

▲ **Purvis Constr. Co.**, 5019 E. Sprague St., Spokane, Wash., CA $2,729,713, est. $2,000,000, 1000 unit Wherry Housing modification and remodeling, Fairchild Air Force Base, IFB-45-613-59-29, SPOKANE, WASH. Procurement Office, Fairchild Air Force Base, Spokane, Wash., Bids Oct. 1, awarded Oct. 29, CD 10/7, under LB.

Ed Hutka Electric, 1352 Railroad Ave., Livermore, Calif. LB $144,900 (8 bidders) installing elec. distr. sys., telephone facilities and street and area lighting in new east area branch of Agnews State Hospital, W. O. 4007GC-2, AGNEW, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Oct. 28. CD 10/13.

† **Dist. P. Wks. Office**, 11th Naval Dist., 1220 Pacific Hy., San Diego, Calif., cancelled bids to have opened Oct. 13, constr. crossing Elder Canal, consisting of earthwork, timber piling, concrete constr. structural steel nonclimbable wire fence, etc., Naval Aux. Air Station, IFB 19463/58B, EL CENTRO, CALIF. CD 9/26.

▲† **Hayes Cal Builders, Inc.**, 13006 Saticoy St., North Hollywood, Calif. LB $1,100,000, est. $1,117,-962 (5 bidders) air force proj. consisting 67 family type officer housing units in Dpt. Defense, Mather Air Force Base, ENG-04-162-59-10, SACRAMENTO, CALIF. Base Procurement Officer, Mather Air Force Base, Sacramento, Calif. Bids Oct. 30. CD 10/3.

Griffith Co., Box 3187, Hillcrest Station, San Diego, Calif. LB $316,741, Imprv. National Ave. Main Ct. to city limits, Chula Vista, SAN DIEGO, CALIF. San Diego County, Civic Center, San Diego, Calif. Bids Oct. 27. CD 10/31/46.

BUILDINGS—LB & CA

▲ **Fluor of Canada Ltd.**, 160 Bloor St., E. Montreal, Que., CA $1,000,000, design and construct MARINE TERMINAL, VALDEZ, ALASKA. Alaska-Yukon Refiners & Distributor Ltd., c/o contractor.

▲ **Barnes Constr. Co.**, 1940 Spring St., Redwood City, Calif., LB $1,844,000, (8 bidders) general constr. 5 story, 158,000 sq. ft. floor space State OFFICE BLDG. and adjoining 2 story rein.-con., about 45,000 sq. ft. floor space parking facility, W.O. 3848CC-4, FRESNO, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Oct. 28. CD 9/26.

C-B Builders Corp., 815 Moraga Dr., Los Angeles, Calif., LB $766,700 (14 bidders) men's and women's RESIDENCE HALLS, LOS ANGELES, CALIF. Occidental College, 1600 Campus Rd., Los Angeles, Calif. Bids Oct. 24. CD 10/20.

A. J. Marek, 450 La Merced Ave., Montebello, Calif., CA $355,000 (8 bidders) 3 story light steel frame Montebello HIGH SCHOOL addns., MONTEBELLO, CALIF. Montebello Unif. School Dist., 123 S. Montebello Blvd., Montebello, Calif. Bids Oct. 24. CD 10/16.

Roblyn Manor, Inc., 184 N. 2nd Ave., Upland, Calif. Owner Builds. $434,700. 46 frame, stucco DWELLINGS, Colorado Ave. and Glencoe St., RIVERSIDE, CALIF.

Peter Sartorio, 140 Reyner St., Colma, Calif., LB $759,502 (10 bidders) constr. CHAPEL and ISOLATION SEGREGATION BLDG., security fencing, site grading, paving and drainage facilities at San Quentin Prison, SAN QUENTIN, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Oct. 28. CD 9/29.

Kemp Bros., 8750 Mettler St., Los Angeles, Calif., LB $840,000 (5 bidders) constr. Contr. 4, Santa Fe HIGH SCHOOL addns., Santa Fe Springs, WHITTIER, CALIF. Whittier Union High School Dist., 12100 E. Washington St., Whittier, Calif. Bids Oct. 23. CD 10/14.

CANADA

BUILDINGS—LB & CA

▲ **Fluor Corp. of Canada Ltd.**, 160 Bloor St. E., Montreal, Que., CA $1,000,000, design and construct 3,000 bbl. per day PRODUCT SEPARATION PLANT. HAINES JUNCTION, YUKON TERRITORY. Alaska-Yukon Refiners & Distributor Ltd., c/o contractor.

▲ **Fernand J. Labrosse, Inc.**, 44 Port Royal St., W., Montreal, LB $1,619,425, 2 story, bsmnt., 50x300 ft. OFFICE BLDG., 1 story, 200x600 ft. WAREHOUSE, incl. concrete fdn., brick walls, rein.-con. frame Metropolitan Blvd. and De l'Acadie Blvd., MONTREAL, QUE. Cie du Marche Central Metropolitan Ltee, 424-A Place, Jacques Cartier, Montreal, Que. Bids Oct. 21. CD 10/6.

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

▲ **Ky., Okolona**—City, City Hall, sanitary sewerage sys., sewage treatment plant to serve 1,076 residences. $1,350,000. Leo W. Peteske, 234 Citizens Bldg., Louisville, Zone 2, consult. engr. Conner, Townsend & Assocs., 360 E. Grand, Chicago, Ill., assoc. engrs. CD 10/1.

▲ **Mass., Brockton**—City, Sewer Dpt., City Hall, sewage treatment plant, Meadow Lane. $3,000,000. Constr. 1959.

▲ **N. C., Forest City**—Town, Town Hall, sewage disposal plant, pumping stations, interceptor lines, etc. $1,012,000. Harwood Beebe Co., P. O. Box 2405, Spartanburg, S. C., consult. engr.

▲ **Alta., Calgary**—City, City Hall, sewage treatment plant to allow more housing starts in South Calgary, $2,000,000. Alex. Nicolson City Hall annex, city engr. CD 3/14/51.

BRIDGES

▲ **PENNSYLVANIA**—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg,
Lancaster and York Counties—bridge over Susquehanna River between Pequea, Lancaster Co. and York Furnace, York Co. $5,000,000. R. A. Farley, c/o owner, ch. engr.

STREETS AND ROADS

▲ **UTAH**—State Rd. Comn., 442 State Capitol, Salt Lake City,
Beaver Co.—7 mi. road Int. Hy. 15 and 80, FAI, $3,000,000.
Summit Co.—7 mi. 4-lane divided hy. Int. Hy. 15 and 80, FAI, $2,900,000.
Utah Co.—embankment N-S Freeway Int. Hy. 15 and 80, FAI, $2,000,000.

EARTHWORK, WATERWAYS

▲† **Idaho**—U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash., multiple purpose, Bruces Eddy Reservoir, North York, Clear Water River, $1,200,000. (no appropriations).

▲† **Pennsylvania**—State Dpt. Forests & Water, 512 Education Bldg., Harrisburg, flood control project on Turtle Creek, incl. 820 ft. concrete channel and relocating 200 ft. earth channel, Mocanaqua, in Luzerne Co., $155,000; state park, east of Ryerson Station, Dunkard Fork of Wheeling Creek, Greene Co. $1,000,000. Bids for dam, soon. CD 12/1/55.

AIRPORTS

▲† **Md., Andrews Air Force Base**—OPERATIONAL FACILITIES U. S. Eng., 1st and Douglas Sts. N. W., Wash. 25, D. C., plans by Whitman, Requardt & Assoc., archts.-consult. engrs. 1304 St. Paul St., Baltimore, taxiway apron $100,000-$500,000 c. operational H. V. apron $1,000,000-$3,000,000 runway parallel over $5,000,000, plans by H. D. Nottingham & Assoc., archts.-consult. engrs., Arlington Towers, Arlington, Va. maintenance hangar $1,000,000-$3,000,000, c. special air maintenance hangar $1,000,000-$3,000,000, plans by McGaughan & Johnson, archts.-consult. engrs. 821 19th St. N. W., Wash. D. C. headquarters group, tactical $100,000-$500,000, constr. shop, A/C Engr. Insp. $500,000-$1,000,000; plans by Turpin Wachter & Assoc., 1004 N. Charles St., Baltimore, archts.-consult. engrs. high altitude training bldg. $100,000-$500,000; plans by Lee Kendrick & Assoc., archts.-consult. engrs. 3132 10th St. North, Arlington, Va. constr. heating plant $100,000-$500,000. CD 9/9

▲† **Wash., Spokane**—BUILDINGS—U. S. Property & Finance Office, 5114 Stellacoom Blvd. S.W., Tacoma, plans by McClure & Adkison, Sherwood Bldg., 8 bldgs. for Air National Guard at Geiger Field, $1,200,-000. Bids to be called next month.

▲ **Ont., Toronto**—AIRPORT—Dpt. Transport, Hunter Bldg., Ottawa, plans by John B. Parkin Assocs., 1500 Don Mills Rd., airport development, incl. metal-faced administration bldg. and four wheel-shaped aeroquays which provide ramp-type parking with underground entrance and second story gangways for boarding planes, runway sys. close to terminal bldg., Toronto Airport, Malton. $20,000,000. CD 12/2/54.

PUERTO RICO

▲ **Puerto Rico, San Juan**—MILL—Rice Growers Assoc. of California, P.O. Box 958, Sacramento, Calif., 5 story rice mill, with storage at Guaynabo, near here. $1,024,000.

PUBLIC BUILDINGS

▲ **Calif., Los Angeles**—SCHOOLS—Bd. Educ., 1425 S. San Pedro St., plans by James R. Friend, Kress Bldg., Long Beach, strengthen and addns. to Fleming High School, $1,450,000; plans by Thonis, Harrison, Wolfe, 1522 Centinela Ave., Inglewood, Perry Edison Gompers & Gage Junior High Schools addns. $433,000. CD 6/9.

▲ **Colo., Greeley**—HOSPITAL—Weld Co. General Hospital, 16 and 17 Aves., 85 bed hospital wing addn. $1,000,000.

▲ **Conn., New Britain**—SCHOOL—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by Henry Ludorf, 95 Elm St., Hartford, 5 wings, 2 story, E. C. Goodwin Regional Technical School, incl. gymnasium, cafeteria, athletic field, charcoal gray and red brick, blue panels of aluminum curtain wall, Slater Rd. $1,200,000. CD 2/7/57.

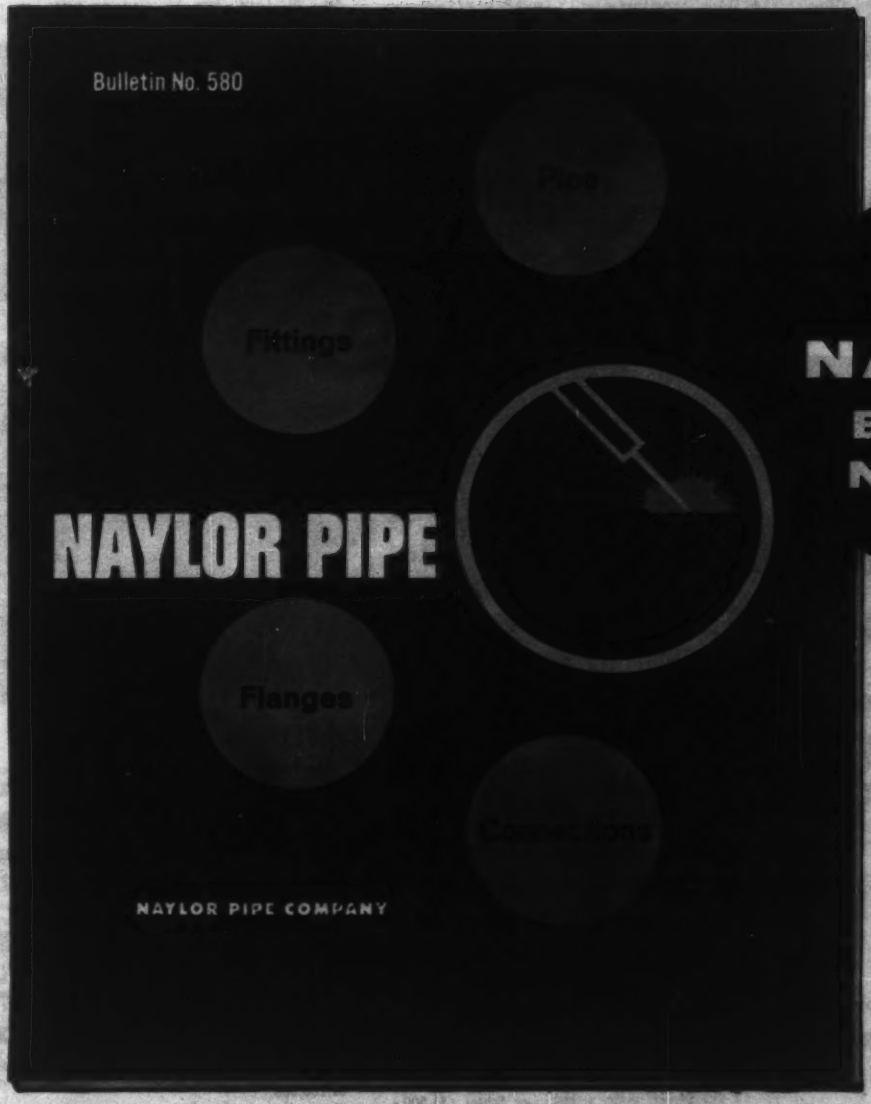
▲ **Ga., Atlanta** — SCHOOL — Fulton Co. Bd. Educ., $3,525,000. bonds Oct. 23, constr. 3 elementary schools, one high school and addns. to 12 schools. CD 10/9.

▲ **Ga., Atlanta**—SCHOOL—State Bd. Educ., State Office Bldg., constr. vocational trade school, $3,000,000.

▲ **Ill., Oak Park**—SCHOOL—School Dist. 97, 122 Forest Ave., plans by Perkins & Will, 309 W. Jackson Blvd. Chicago, Zone 6, Hawthorne School alterations, addns.

(Continued on page 100)

Helps ANSWER Your PIPE PROBLEMS



Write for NAYLOR Bulletin No. 580

Here in concise form is helpful data covering NAYLOR pipe, fittings and connections for use in the construction field. Bulletin No. 580 includes standard specifications on NAYLOR Spiralweld pipe in sizes from 4" to 30"; standard fittings and welding flanges carried in stock; NAYLOR Wedgelock couplings and all types of connections to meet pipe line needs. Write for your copy today.

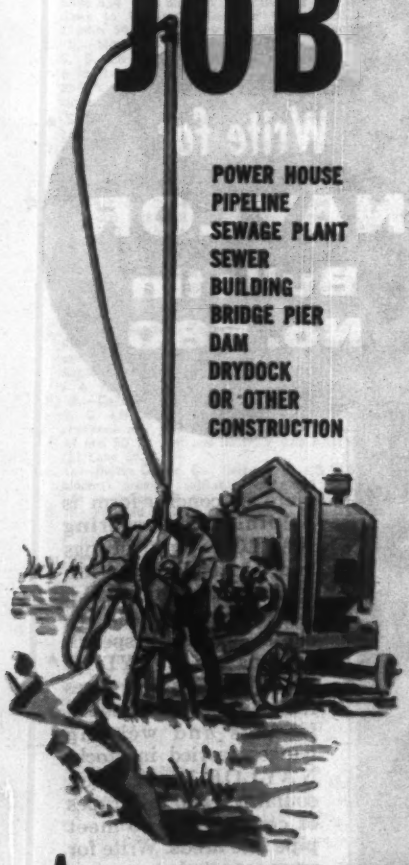
NAYLOR PIPE Company

1248 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

HERE'S DEPENDABLE
WELLPOINT SERVICE
FOR YOUR
WET
JOB

POWER HOUSE
PIPELINE
SEWAGE PLANT
SEWER
BUILDING
BRIDGE PIER
DAM
DRYDOCK
OR OTHER
CONSTRUCTION



ANALYSIS OF GROUND-WATER PROBLEM AND PRE-BID DEWATERING ESTIMATE WITHOUT OBLIGATION

GRIFFIN
WELLPOINT CORP.
SALES • RENTAL • CONTRACT

881 E. 141st St., New York 54, N.Y.
Jacksonville, Fla. • Houston, Tex.
W. Palm Bch., Fla. • Hammond, Ind.

In Canada: Construction Equipment Co., Ltd.
In Venezuela: Drew Bear & Sons C.A.

(Continued from page 98)

$800,000, CD 11/16/55; third floor steel frame Emerson School addn., $500,000.

▲ Ind., Indianapolis—COUNTY JAIL—Comrs. Marion Co., Courthouse, plans by McGuire & Shook, Compton, Richey & Assocs., Fletcher Trust Bldg., county jail, Maryland, Delaware, and Pearl Sts. $4,000,000.

▲ Mich., East Detroit—SCHOOLS—East Detroit School Bd., 15700 E. 9-Mile, East Detroit, plans by Odell, Hewlett & Luckenback, archts.-consult. engrs., 950 N. Hunter, Birmingham, school addn., $1,000,000; brick steel school addn., extension, $400,000. CD 4/15.

▲ Minn., St. Cloud—SCHOOL—Bd. Educ., $1,975,000 bond election Nov. 25, Junior High School. $1,600,000. CD 7/21.

▲ Miss., University—FAMILY APARTMENTS—Mississippi State Bldg. Comn., 1503 Woolfolk State Office Bldg., Jackson, 9 apartment bldgs. to house 100-student families; 2 apartment bldgs. for 16 faculty families; 10-single family bldgs. and dormitory for 204 men. Over $1,672,000.

▲ N. J., Caldwell—SCHOOL—Caldwell-West Caldwell School Dist., voted $2,900,000 bonds, Senior High School, Bids late December or early January, Runyon & Carey, 20 Fulton St., Newark, engrs. Micklewright & Mountford, 90 E. Stuyvesant Ave., Trenton, archts. CD 5/27.

▲ N. J. Matawan—SCHOOL—Bd. Educ., Madison Twp, plans by Alex Merchants Assocs., 1 Elm Row, New Brunswick, high school, Brownstown section of Township, $2,173,000. Bids in March.

▲ N. J., Mays Landing—SCHOOL—Greater Egg Harbor Regional High School Bd., bond election Dec. 2, Regional High School, $1,700,000. The Ballinger Co., 1625 Pace St., Phila., Pa., archt.-engr. CD 7/10/57.

▲ N. J., Wayne—SCHOOL—Bd. Educ., bond election Nov. 26, Junior High School, Hamburg Turnpike, Lafayette School and Mountain View School addns., $1,993,000, Emil Schmidlin, 586 Central Ave., East Orange, archt. CD 6/20.

▲ N.M., Portales—DORMITORIES—Eastern New Mexico University, 300 capacity women's dormitory, $1,289,460. 125 room, brick, masonry men's dormitory, $430,000.

▲ N.Y., Ridgewood—GARAGE—New York City Transit Auth., Jay St., Brooklyn, 250 x 500 ft garage, 66-99 Fresh Pond Rd., Queens Boro. $2,400,000.

▲ Okla., Duncan—SCHOOL—Bd. Educ., voted bonds Oct. 21, high school, West Duncan. $1,300,000. Kenneth Price, Duncan, archt. CD 9/11.

▲ Tex., Austin—SCHOOL—Bd. Texas State Hospitals & Special Schools, 4405 Lamar Blvd. (Texas Youth Council, Administrators) plans by Rustay & Martin, 1811 Crawford St., Houston, (Negro) Blind, Deaf and Orphans Home School. $1,500,000. Bids by 1959.

▲ Tex., Odessa—SCHOOL—Ector County Ind. School Dist., Junior High School. $1,050,000, Elementary School No. 1 $400,000. Elementary School No. 2 $450,000, school addns. $400,000. CD 4/4.

▲ Tex., San Antonio—HOSPITAL—Bexar County Hospital Dist., 515 Morales St., plans by Ross Garrett & Assocs., Warwick Hotel, Houston. Rob. B. Green Memorial Hospital Addn. $2,500,000.

▲ Tex., San Antonio—SCHOOL—San Antonio Ind. School Dist., Lavaca and Matagorda Sts., plans by Phelps & DeWees & Simmons, 342 W. Woodlawn Ave. Junior High School Pickway and Galveston Drives, SE section of city $1,000,000; Eastside Elementary School $750,000. CD 5/25/55.

▲ Wash., Ellensburg—LIBRARY, etc.—Central Washington College of Educ., plans by Bassetti & Morse, Tower Bldg., Seattle, Zone 1, 82,500 sq. ft. library, $1,344,288, work may begin next year, CD 10/1; plans by Culler, Gale, Martell & Norrie, Realty Bldg., Spokane, education-psychology bldg., $800,000, CD 8/28.

▲ Wyo., Cheyenne—SCHOOLS—Cheyenne School Dist., voted $3,600,000 bonds Oct. 21, high school, $2,700,000, elementary schools addns., $900,000. CD 10/1.

▲ Que., Chibougamau—RADAR STATION—Defence Construction (1951) Ltd., 56 Lyon St., Ottawa, Ont., semi-automatic radar station, with quarters for personnel, Mount Bourdeau, 3 mi. north of here, $10,000,000.

COMMERCIAL BUILDINGS

▲ Calif., Oakland—HOTEL—Sheraton Hotel Corp. of America, 470 Atlantic Ave., Boston, Mass. 22-25 story, 40,000 sq. ft. 350 room hotel, $7,000,000.

▲ Colo., Denver—SCHOOL—University of Denver, Civic Center Campus, plans by Perkins & Will, 309 W. Jackson St., Chicago, Ill., and Buel & Co., 730 14 St., Denver, assoc. archts., Law School. $1,500,000. Bids about Jan. 19. CD 12/12.

▲ Colo., Lakewood—SHOPPING CENTER—Conrad Becker, 2121 Wadsworth, Denver, plans by Ralph D. Peterson & Arthur Auburn, 1701 Gilpin, Denver, shopping center, W. 32 Ave. and Youngfield St. $1,000,000-$2,000,000.

▲ Ind., Indianapolis—HOMES—Hurt Brothers Realty Co., 212 N. Delaware St., 400 home addn. south of Southern Ave. and east of Lynhurst Dr. $5,400,000.

▲ Ind., Indianapolis—SCIENTIFIC RESEARCH CENTER—Bd. Trustees, Butler University, scientific research center. $3,000,000.

▲ La., New Orleans — HOSPITAL — Dillard University, 2425 Louisiana Ave., plans by Goldstein, Parham & Labouisse, American Bank Bldg., 4 story brick Flint Goodridge Hospital addn. $1,132,350.

▲ Minn., Crystal (P. O. Minneapolis)—APARTMENTS—M & W Realty, 6028 Forty-Second Ave. North, Minneapolis, plans by W. Thorsen, 124 South Fourth St., Minneapolis, apartments, incl. 119 units, Medicine Lake Rd. and Douglas Dr. $1,000,000.

▲ Minn., Winona—SCIENCE CENTER—College of St. Theresa, Winona, plans by Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, 3 story 1,000,000 cu. ft. Roger Bacon Science Center. $1,000,000. Bids in Spring.

▲ Mo., Columbia—DORMITORIES—Stephens College, E. Broadway and College, plans by Murphy & Mackey, 6124 Enright Ave., St. Louis, Zone 5, two dormitories: (A) 4-story, ground floor 58 x 122 ft. (B) 3 story, 58 x 146 ft. Over $1,000,000. CD 5/22.

▲ Mo., St. Louis County—RESIDENCES—Behymer Developing Co., Olive St. and Craig Rds., St. Louis County, 300 residences, Orchard Estates Sub-Division, Olive St. and Craig Rds. $6,000,000.

▲ Mo., St. Louis County — COLLEGE, etc.—Maryville College of Sacred Heart, 2900 Meramec St., St. Louis, Zone 18, plans by Design, Inc., 1130 Hampton Ave., St. Louis, Zone 10, classroom bldgs., dormitories, chapel, quarters for nuns and faculty, administrative office, etc., Daniel Boone Parkway, U. S. 40-61. $10,000,000. (Goal to complete six bldgs. costing $3,000,000 before Sept. 1960). CD 5/21.

▲ N. J., West Caldwell—HOUSES—Lewis Epstein, 1232 Van Houghton Ave., Clifton, plans by Rudolph L. Nowak, 89 Central Ave., Clifton, 50 houses, Westville Ave. $1,125,000.

▲ O., Cincinnati—OFFICE—Inter-Ocean Insurance Co., American Bldg., plans by Samuel Hannaford & Sons, engrs.-archts., Dixie Terminal Bldg., 2 story, 45,000 sq. ft. limestone, aluminum, air-conditioned office bldg., Victory Parkway and Wm. Howard Taft Rd. $1,000,000.

▲ O., Cincinnati—HOMES—R. W. Norris, 3159 Harrison Ave., 90 1 floor brick, bsmt., houses, North Glen near Bridgetown Rd. $1,890,000. Edward Niemeier, 4484 Harrison Ave., consult. engr. CD 4/18/57.

▲ O., Mason—HOMES—Cincinnati Development Co., c/o Robt. Wynne, 7127 Euclid Ave., Kenwood, 400 one floor bsmntless, prefabricated homes, Western Row Rd., $5,200,000. Edward Niemeier, 4484 Harrison Rd., Cincinnati, consult. engr.

▲ Tenn., Chattanooga—APARTMENT—James I. Hilton, 425 High St., plans by Bianculli & Palm, Volunteer Bldg., 400 unit apartment. $2,700,000.

▲ Tex., Dallas—SHOPPING CENTER—John T. and Jack Lively, 9200 Guernsey St., shopping center, $5,000,000; hard-paved area and auto center, $85,000; site earthwork development, $50,000, at Northwest Hy. and Midway Rd.

▲ Tex., Pasadena—APARTMENT, etc.—Verne Harris & Ken Boggess, Builder, 8740 Linkterrace St., Houston, 336 unit apartment program $2,700,000. auto parking center (covered and open paved) $175,000. Anthony Luciano & Assocs., 600 McGowen St., Houston, consult. engrs. CD 10/23.

▲ Alta., Calgary — OFFICE—British Pacific Building Ltd. 504 Empire Bldg., plans by Rule Wynn & Rule, 526 12th Ave., S. W., 20 story office bldg. called Elveden House, $5,000,000. Bids soon.

▲ Que., Montreal—OFFICE—Owner, c/o Kensington Industries, Inc., 1224 St. Catherine St. W., 12 story, 20,000 sq. ft. office bldg., NE corner Dorchester W. and Guy Sts. $1,000,000.

▲ Sask., Regina—HOUSES—Paget Constr. (Sask.) Ltd. Headquarters, 2033 26th Ave., Calgary, Alta., 172 brick, masonry houses, Coronation Park suburb. $2,000,000.

INDUSTRIAL BUILDINGS

▲ Ala., Brewton—PLANT—Container Corp. of America, Brewton, converter plant adjacent to present paperboard mill. $1,000,000.

▲ Ala., Demopolis—PLANT—Gulf States Paper Corp., Tuscaloosa, expanding paper plant. $10,000,000. CD 10/22/54.

▲ Ala., Tuscaloosa—PLANT—Gulf States Paper Corp., imprv. pulp and paper plant. $10,000,000. CD 10/22/54.

▲ Fla., Miami—PLANT—Miami Herald, 200 S. Miami Ave., newspaper plant, MacArthur Causeway and Venetian Causeway. $5,000,000-$10,000,000. Naess & Murphy, 80 E. Jackson Blvd., Chicago, Ill., consult. engrs.

▲ N. J., Kenilworth—PLANT—The Carborundum Co., 60 E. 56 St., New York, N. Y., plant expansion, Crows Mountain Rd. $1,000,000. Allied Engineering Co., 4150 E. 56 St., Cleveland, O., consult. engr.

▲ N. Y. Brooklyn—WAREHOUSE etc.—F & M Schaefer Brewing Co., 430 Kent Ave., Zone 11, plans by Eggers & Higgens, 100 E. 42 St., New York, Zone 17, 2 story warehouse and offices, 441-77 Kent Ave. $1,200,000.

▲ Tenn., Counce—BOARD MILL—Tennessee River Pulp & Paper Co., 230 Park Ave., New York, N. Y. kraft pulp and container board mill with 500 ton daily cap. and to employ 1,000 persons. $40,000,000.

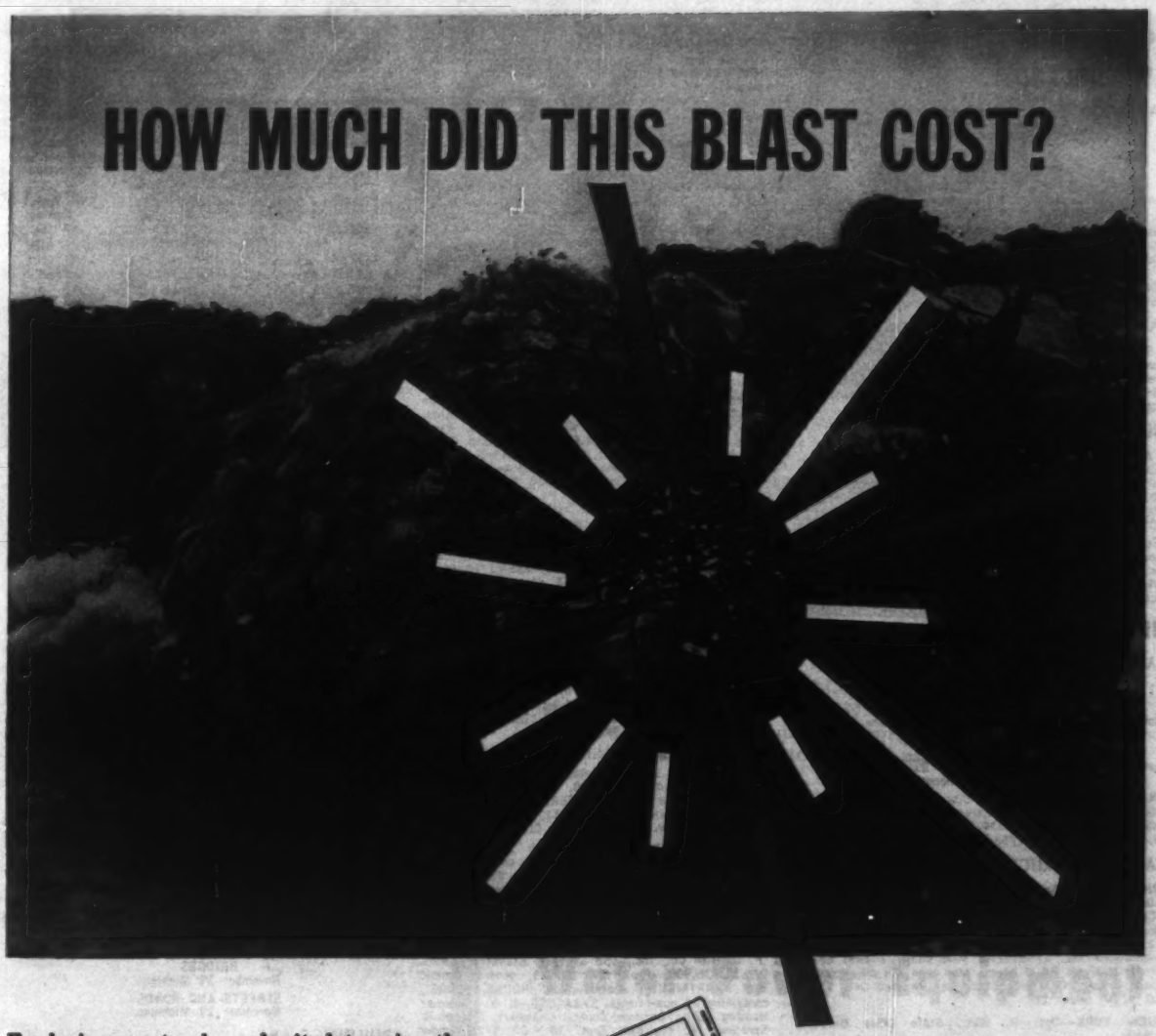
▲ Wyo., Cody—REFINERY—Husky Oil Co., Cody, enlarging refinery and pipe lines. $12,000,000-$14,000,000.

▲ Que., Montreal — PLANT, etc. — Quebec Industrial Leaseholds Ltd., 1010 St. Catherine St. W., (subsidiary of Webb & Knapp (Canada) Ltd.) plant and office, Cote de Liesse Rd., Dorval, Montreal suburb. $1,500,000. Mussens (Canada) Ltd., 63 Colborne St., lessee.

UNCLASSIFIED

▲ Oklahoma—RURAL DISTRIBUTION SYSTEM—Peoples Electric Co-operative Assn., Ada, 73 mi. rural distr. sys. addns. Pontotoc and Coal Counties, Okla. 17 V Pontotoc, $1,455,000. C. H. Guernsey & Co., 2701 North Oklahoma St., Oklahoma City, consult. engrs. CD 7/21/50.

HOW MUCH DID THIS BLAST COST?



Explosives costs alone don't determine the value of a given blast. The explosives you use have a direct effect on the whole operation: drilling, digging, hauling and crushing.

You can find out, quickly and easily, the true, complete cost on any blast by using the new, simplified computing method developed by Atlas. It's called the Blasting Cost Chart, and it's yours without cost or obligation.

Use this new method to learn your real blasting costs. It will help you plug profit leaks and come out money ahead in your blasting. Your nearest Atlas representative will show you how the chart works, and you can keep the actual figures within your own organization.

EXPLOSIVES
DIVISION
ATLAS
POWDER COMPANY
WILMINGTON 99, DELAWARE
offices in principal cities

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 24 Connecticut

STREETS AND ROADS

November 18 Massachusetts November 20 Rhode Island
November 24 Connecticut

▲ Mass., East Boston—HANGAR, etc.—BA 12/3—Commonwealth of Mass., Airport Management Bd., Div. Bldg. Constr., 28 Chauncy St., Boston, L-58-2, Contr. 1, hangar and lean-to bldg. at Logan Airport. $2,500,000. Plans deposit $150. Goldberg-LeMessurier Assoc., 669 Boylston St., Boston, structural engrs. CD 7/31.

HEAVY CONSTRUCTION—LB & CA

▲† Savin Bros., Inc., 522 Cottage Grove Rd., Bloomfield, Conn. CA $3,517,768, Townshend Reservoir and Dam, West River, ENG-19-016-59-7, VERMONT. U. S. Eng., 150 Causeway St., Boston, Mass. Bids Oct. 9, awarded Oct. 31. CD 10/13, under LB.

BUILDINGS—LB & CA

▲† Anthony Grace & Sons, Inc., 151-45 Sixth Rd., Whitestone, N. Y., CA $2,866,093, 177 capehart HOUSING UNITS, Topsham Air Force Base, ISB-19-603-59-15, TOPSHAM, ME. Base Procurement Office, Otis Air Force Base, Falmouth, Mass. Bids Sept. 17. CD 10/3, under LB.

▲ Felix Buzzi & Son, Inc., 612 South Main St., Torrington, Conn., CA $2,997,900, Life SCIENCE BLDG., University of Connecticut, STORRS, CONN. State P. Wks. Comrs., 165 Capitol Ave., Hartford, Conn. Bids Oct. 22. CD 10/24, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 18 Maryland November 20 New York
November 21 Pennsylvania

STREETS AND ROADS

November 18 Maryland November 21 Pennsylvania
November 25 New Jersey

▲ N. J., Trenton—BA 12/18—City, City Hall, sewerage addns., alterations, sewage treatment plant. $6,000,000. Bogart & Childs, 634 Madison Ave., New York, N. Y., engrs. CD 7/27/56.

HEAVY CONSTRUCTION—LB & CA

▲ NEW YORK—Dpt. P. Wks., State Office Bldg., Albany,
D. Cerretani & Sons, and N. R. Corbisello, Inc., P. O. Box 45, Binghamton, N. Y., CA $1,911,396, est. $2,819,000, 6 single beam composite highway grade separations Rte. 17 at Five Mile point, 1 twin box bridge at Evans Rd. 3.04 mi. ston. and 0.6 mi. access road, Broome Co. Bids Sept. 18, awarded Oct. 17. CD 9/19, under LB.

▲ NEW YORK—Dpt. P. Wks., State Office Bldg., Albany,
N. Y.—Wm. E. Bouley Co., Inc., Auburn, N. Y., CA $896,662 est. $944,000, reconstr. 4.13 mi. section Rte. 38, Cayuga Co.;
N. Y.—Mass. Northern Constr. Corp., 1 Mill St., Lawrence, Mass., CA $3,904,897, est. $4,563,000, 2.57 mi. four-lane divided asphalt concrete pavement, section Interstate Rte. 502 from Ridge Rd. to Canadian border Sect. 7D-2, Clinton Co.;
N. Y.—Arthur V. Towner, Inc., 1900 Clinton Ave. So., Rochester, N. Y., CA $813,338, est. $949,000, 5.46 mi. Rte. 222, Cortland and Graton, Cortland and Tompkins Counties;
N. Y.—The Lane Constr. Corp., 911 E. Main St., Meriden, Conn., CA $1,186,565 est. $1,559,000, reconstr. 5.53 mi. Rte. 177 in two sections between Adams Center and Tremaines Corners, incl. replacement of culvert over Fish Creek and 2 bridges one over Sandy Creek and other over Fish Creek, Jefferson Co.;
N. Y.—Bero Constr. Corp., P. O. Box 70, Waterloo, N. Y., CA $816,149, est. $1,001,000, 9.17 mi. Lake Ontario State Parkway, Monroe Co.;
N. Y.—Arthur A. Johnson Corp. & Peter Kiewit Sons Co., 347 Madison Ave., New York, N. Y., CA $1,816,102 est. $2,054,000, 1.34 mi. b. conc. and cement access roads, three highway grade separation structures and one railroad bridge, Montgomery Co.;
N. Y.—Norman L. Kieffer Constr. Co. Inc., 78 Court St., Lancaster, N. Y., CA $684,830, est. $774,000, widn., resurf. 6.5 mi. section Rte. 31 starting at Military Rd. and extending eastward to Ward Rd. in village of Sanbor, Niagara Co. Grand total $10,118,545. Bids Sept. 18. CD 9/19, under LB.

▲ NEW YORK—Dpt. P. Wks., State Office Bldg., Albany,
N. Y.—Cherango Corp., 300 E. Hiawatha Blvd., Baldwinsville, N. Y., CA $623,007, est. $806,000 reconstr. 7.8 mi. section Rte. 31 from Cicero eastward to county line near Bridgeport, Onondaga Co.;
N. Y.—Rapone Contg. Corp., Fulton St., Farmingdale, N. Y., CA $2,534,083, est. $3,043,000, constr. 2.6 mi. Sunrise Hy. extension from Yaphank Ave., Brookhaven to Upton Blvd. Cont. 2, Rte. 27, Suffolk Co. Bids Aug. 28. CD 10/23, under LB.

▲ NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany,
Ferguson & Edmondson Co., 407 Keystone Bldg., Pittsburgh 22, Pa., CA $3,003,523, est. $3,747,000, relocation 5.12 mi. New York Central and Erie R. R. tracks on eastern outskirts Niagara Falls, Niagara Co. Bids Aug. 7, awarded Oct. 15. CD 8/8, under LB.

▲ Bethlehem Steel Co., 33rd St., Bethlehem, Pa., CA $1,647,820, superstructure for American Rapids Bridge and approaches between Niagara Falls and Goats Island, Niagara Co., Spec. No. 5826B, Niagara Contr. No. N15, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Oct. 30. CD 10/31, under LB.

▲ PENNSYLVANIA—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg, Bids opened 10/30,
Pa.—Pittsburgh Bridge & Iron Works, 1601 Union Bank Bldg., Pittsburgh 22, Pa. LB $2,053,521, 1,695 ft. constr. superstructure, incl. steel bents, ramps for Crosstown Blvd., viaduct alteration, L. R. 1026 (1A) Pittsburgh, Allegheny Co.;
Pa.—Sanctis Constr. Inc., 410 Marlow St., Pittsburgh 20, Pa. LB $1,296,169, 1,908 constr. abutments, bent foundations, retaining walls, slopewalls, ramp paving, reconstr. Try St. R.R. yards, section Crosstown Blvd. L. R. 1026 (1), Pittsburgh, Allegheny Co.;
Pa.—Berlanti Constr. Co., Inc., 15 Oakland Ave., Harrison, N. Y. LB $448,531, est. $600,000 7 span I-beam bridge to carry Dock St. over Pa. R.R. tracks and 1,700 ft. plain c. conc. base with bit. surf. variable in width, retaining walls, Harrisburg, Dauphin Co. CD 10/15.

▲ PENNSYLVANIA—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg, Bids opened 10/30,
Pa.—The Lane Constr. Corp., 965 E. Main St., Meridan, Conn. LB $3,313,581, est. $3,040,000 21,062 ft. divided hy. of rein.-con., 24 ft. wide each side 60 ft. earth divisor; 3 pairs alt. superstructure bridges section Penn-Can Hy. (Proj. 819-3) FAI Lenox Twp. Susquehanna Co.;
Pa.—Central Penna. Quarry Strip & Concrete Co., 270 S. Pine St., Hazleton, Pa. LB $1,491,232, est. $2,320,000 9,957 ft. divided hy. of rein.-con. 24 ft. wide each side 60 ft. earth divisor, section Penn-Can Hy. (Proj. 820-3) FAI New Milford Twp., Susquehanna Co. CD 10/15.

BUILDINGS—LB & CA

▲ Fischer-Malik, 1319 Manatuck Blvd., Bay Shore, L. I., N. Y., CA $1,805,500, general constr. HIGH SCHOOL, Marshall Dr., CENTEREACH, N. Y. Centereach-Selden School Dist. No. 11, Unity Dr. School, Centereach, N. Y. Bids Oct. 7. CD 9/25.

▲† Sovereign Constr. Co., 1325 17th St., Fort Lee, N. J., LB $3,288,000 (20 bidders), constr. (except elevator plant) 12 story BUILDING for United States Mission to United Nations Building, United Nations Plaza and E. Forty-Fifth St., NEW YORK, N. Y. General Services Admin., Business Service Center, 250 Hudson St., New York 13, N. Y. Bids Oct. 31. CD 10/1.

▲ F. D. Rich Co., Inc., 550 Summer, Stamford, Conn., CA $1,536,900, Proj. No. NY-1-3, general constr. 172 APARTMENTS and four-row HOUSE BLDGS., containing 22 apartments, SYRACUSE, N. Y. Syracuse Housing Auth., Common Council Chambers, City Hall, Syracuse, N. Y. Bids Sept. 16. CD 9/26, under LB.

▲ Carl Gordon, Park Ave., New Brunswick, N. J., Owner Builds, $1,250,000, 44 HOUSES, Rte. 130 near CRANBURY, N. J.

▲ Wark & Co., 1920 Sansom St., Phila. Pa., CA Est. $1,300,000. 145,000 sq. ft. FOLDING CARTON PLANT and 11,500 ft. OFFICE, NORTH WALES, PA. Edwin J. Schoettle Co., 533 N. 11th St., Phila. Pa. Bids Oct. 9. CD 9/29.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 18 South Carolina November 19 Louisiana
November 21 Kentucky

STREETS AND ROADS

November 18 South Carolina November 19 Louisiana
November 21 Kentucky

▲ Ga., Atlanta—AIRPORT TERMINAL BLDG.—BA 12/9— City Purchasing Agent, City Hall, airport terminal bldg. $6,000,000-$7,000,000. Plans deposit $150. Robert & Co. Assocs., 96 Poplar St. NW, engrs.-archts. CD 4/30/57.

BUILDINGS—BA

▲ Fla., Tampa—STATE AGENCY—BA 12/2—Bd. Comrs. State Institutions, Terry C. Lee, secy., Capitol Bldg., Tallahassee, state agency bldg., Jefferson and Twigg Sts. James Kennedy, 355 1st National Bank Bldg., F. McLane & J. Ranon, 402 N. Nebraska, and Robert Wielage, 1303-C5-Dale Mabry, archts. CD 11/14/57.

HEAVY CONSTRUCTION—LB & CA

▲ GEORGIA—State Hy. Dpt., 2 Capitol Sq. S. W., Atlanta,
rejected bids Oct. 10, grading, divided lane paving, 1 double and 1 single bridge, railroad grade separation structures, 2 double and 1 single bridge hy. grade separation structures and 1 double bridge stream crossing structure Bainbridge By-Pass Rd., Fed. Aid Proj. UG-027-2(3) and U-007-1(5), Decatur Co. LB $1,692,985. CD 10/15, under LB.

▲ GEORGIA—State Hy. Dpt., 2 Capitol Sq. S.W., Atlanta,
MacDougald Constr. Co., Box 1655, Atlanta, Ga., LB $7,995,960 7.399 mi. divided land grading and paving 12 hy. grade separation structures and 1 railroad grade separation structures Atlanta-Augusta Freeway, Fed. Aid Proj. No. 0-20-2(6)58 (I-402-26) "old", Fulton and DeKalb Counties. Bids Oct. 10. (Correction —low bidders). CD 10/15, under LB.

▲† Standard Dredging Corp., 200 E. 42 St., New York, N. Y. LB $2,814,645 channel dredging and Turning Basin Port Tampa, ENG-08-123-59-18, FLORIDA. U. S. Eng., 527 Riverside Ave., Jacksonville, Fla. Bids Oct. 30. CD 9/23.

▲ KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort,
Ky.—R. C. Durr, Rte. 1, Walton, Ky., CA $1,645,225, surf. 3.984 mi. Covington-Lexington Rd. Interstate and 2 bridges, I 75-7(9) 169, SP 8-55, Boone Co.;
Ky.—Oman Constr. Co., Inc., P. O. Box 145, Nashville 2, Tenn., CA $1,540,101, grade, drain Covington-Lexington Interstate 4.907 mi. I 75-7(7) 165, SP 8-550 & SP 59-675, Boone and Kenton Counties; CA $1,981,646, grade, drain and 8 structures 4.526 mi. Louisville-Lexington Interstate, I 64-2(5) 17, Jefferson Co. Grand total $5,166,972. Bids Oct. 17. CD 10/22, under LB.

▲ KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort. Bids opened 10/31,
Ky.—Foster & Creighton Co., 724 1st National Bank Bldg., Nashville 3, Tenn., LB $4,378,991, (6 bidders) b. conc. 4.149 mi. Interstate Covington-Lexington Rd. I 75-8(12)181, Kenton Co. CD 10/8;
Ky.—Lovell & Hart, Inc., P. O. Box 1528, Lexington, Ky., LB $745,613 (4 bidders), high type surf. 1.799 mi. Stanford-Somerset (Stanford-By-Pass) Rd. US 27. F FG 525(7), Lincoln Co. CD 10/15.

BUILDINGS—LB & CA

▲ The Auchter Co., 57 Evergreen St., Jacksonville, Fla., CA $5,236,000, CITY HALL, JACKSONVILLE, FLA. Jacksonville City Comn., Jacksonville, Fla. Bids Sept. 24, awarded Oct. 30. CD 10/1, under LB.

▲ Bradford Bldrs., Inc., 132 Aragon Ave., Coral Gables, Fla., LB $4,373,281, Base Bid, HOSPITAL, North Kendall Dr. and SW 88 Ave., MIAMI, FLA. Miami Baptist Hospital, Inc., 1324 West Flagler St., Miami, Fla. Bids Oct. 23. CD 9/23.

▲ Heftler Constr. Co., 1402 NW 183 St., Miami, Fla., Owner Builds, $1,250,000. 141 RESIDENCES, NW 179 Terrace, NW 49 Ave., Carol City, MIAMI, FLA. Gerber, Panani & Crump, 1007 DuPont Plaza Center, Miami, Fla., archts.

▲ North Orlando Co., Box 581, Longwood, Fla., Owner Builds, $1,280,000, 160 RESIDENCES, ORLANDO, FLA.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 19 Michigan

STREETS AND ROADS

November 19 Michigan

BUILDINGS—BA

▲ Ind., Columbus—FACTORY, etc.—BA 11/20—Cummins Engine Co., Inc., Fifth and California Sts., 2 story, 260 x 440 ft. and 120 x 220 ft. rein.-con., steel frame mfg. factory and warehouse addn. $1,750,000. Harry Weese & Assoc., 104 S. Michigan St., Chicago 3, Ill., archts. Frank Kornacker & Assoc., 53 W. Jackson St., Chicago 4, Ill., structural engrs. Samuel R. Lewis & Assoc., 407 S. Dearborn St., Chicago, Ill., mech. engrs. CD 7/18.

† Mich., Grand Rapids—MARINE CORPS RESERVE—BA 12/2—Dist. P. Wks. Office, Ninth Naval Dist., Bldg. 1-A, Great Lakes, Ill., 1 story 41 x 98 ft. wood frame on concrete fdns. Marine Corps Reserve addn., Naval Reserve Training Center, Spec. No. 14746/58 $25,000-$100,000.

▲ Wis., Sheboygan—SCHOOL BA—12/16—Bd. Educ., high school, $3,630,000, Plans deposit $75, Extended date. R. J. Strass, Inc., 225 E. Michigan St., Milwaukee, engr. E. A. Stubenrauch & Assocs., 712 Erie Sts., Sheboygan, archts. CD 10/28.

HEAVY CONSTRUCTION—LB & CA

▲ OHIO—State Hy. Dpt., Columbus, Zone 15. Bids opened 10/28,
O.—The Crawford Constr. Co., 782 Charles St., Galion, O. LB $279,549, est. $333,100 (8 bidders) Proj. 547, Type T-35 on 8119, 1.882 mi. and structures, SR 545-2.87 (6.44) (9.05-9.46) (10.89-11.01) S-340 (3), Ashland and Richland Counties;
O.—Lawder & Son, Inc., Station E., Box 6, Toledo, O. LB $2,054,613, est. $2,114,200 (5 bidders) Proj. 552, Type T-35, T-71, 7.469 mi. and structures USR 33-11.50, USR-4.92 F-38 (3) ACI-196 (6) City of Wapakoneta, Auglaise Co.;
O.—National Engineering & Contg. Co., 1968 W. Third St., Cleveland, O., LB $2,493,102, est. $3,186,000 (7 bidders) Proj. 556, Type T-35 on B-70, 0.289 mi. and structures, USR 42-18.77, ACI-1057 (9), City of Cleveland, Cuyahoga Co.;
O.—The General Asphalt Paving Co., 500 Main Court S.E., Canton, O., LB $1,380,615, est. $1,532,800 (6 bidders) Proj. 561, Type T-35 on B-219, 3.375

(Continued on page 106)

General view of dam at Grand Coulee, built by the Bureau of Reclamation, which utilizes 18 Newport News turbines, the most powerful ever built. Nine are 150,000 h.p. units, and the other nine are rated at 165,000 h.p. each.

Specialists • • in building Water Power Equipment

Turbines designed and built for the world's largest development at Grand Coulee... and for other hydroelectric installations in America and various parts of the world... bespeak the skill and facilities offered by Newport News.

This trained organization has filled hydroelectric turbine contracts with an aggregate rated output of 7,000,000 horsepower.

Other equipment designed and built by Newport News includes penstocks, pressure regulators, valves, pumps, gates and rack rakes. Upon request, a copy of our illustrated booklet entitled "WATER POWER EQUIPMENT" will be sent to you.

Typical Users of Newport News Equipment

PLANT	LOCATION
Boone	Tennessee
Buchanan	Texas
Coamillas	Puerto Rico
Chief Joseph	Washington
Clark Hill	South Carolina
Deer Lake	Newfoundland
Folsom	California
Fort Patrick Henry	Tennessee
Hiwassee	Tennessee
Hoover	Nevada
J. H. Kerr	Virginia
Jim Woodruff	Florida
Lower Salmon	Idaho
Norris	Tennessee
Rock Creek	California
Santee-Cooper	South Carolina
C. J. Strike	Idaho
Whitney	Texas
Wilson	Alabama

Newport News
SHIPBUILDING AND DRY DOCK COMPANY
Newport News, Virginia

seals right...

Lay Tyton Joint® pipe and relax.

Tyton Joint pipe is sealed tight...water-tight ...by a specially designed rubber gasket that is compressed by the entering pipe.

Tyton Joint pipe is easy to work with, too. So easy even "green" crews become experts in minutes. No bell holes, no pouring snake, no caulking equipment...no nuts or bolts to

U.S. PIPE FOR WATER, SEWERAGE AND

bottle tight

tighten. What's more, you can lay Tyton Joint pipe in rain or wet trench if need be. Result? More working days... fewer delays... time and money saved in the trench.

Want more facts about the economical joint engineers have called a most significant advance in cast iron pipe?

Write or call today.

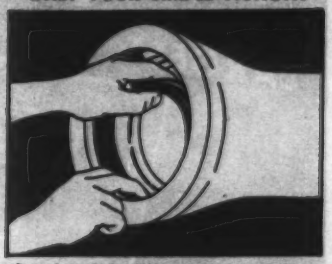
U. S. PIPE AND FOUNDRY COMPANY
General Office: Birmingham 2, Alabama

A WHOLLY INTEGRATED PRODUCER FROM MINES AND BLAST FURNACES TO FINISHED PIPE

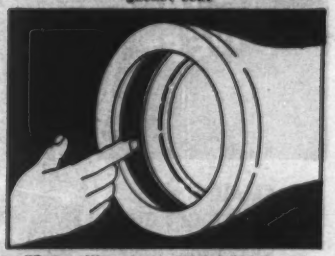
INDUSTRIAL SERVICE CAST IRON

TYTON

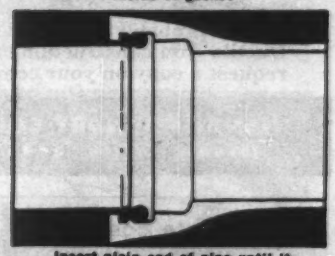
ONLY FOUR SIMPLE ACTIONS



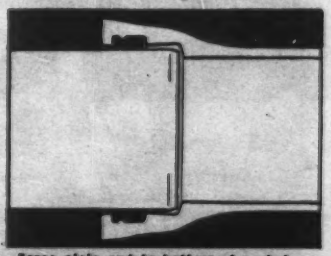
Insert gasket with groove over bead in gasket seat



Wipe a film of special lubricant over inside of gasket



Insert plain end of pipe until it contacts gasket



Force plain end to bottom of socket... the job's done!

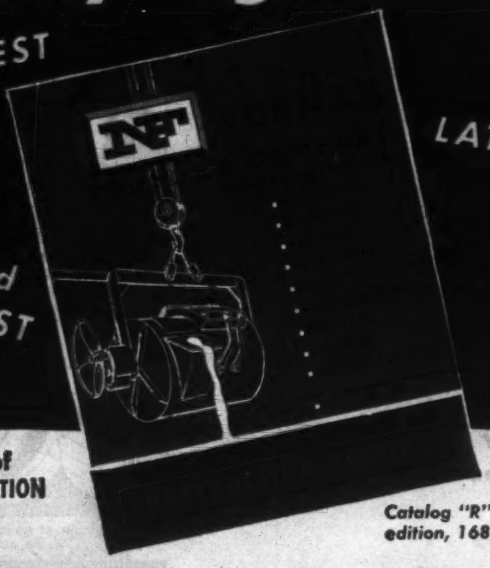
8" Tyton Joint water line for new high school in Alabama.

Ready Right Now!

LARGEST

LATEST

and FINEST



CATALOG of CONSTRUCTION CASTINGS

Catalog "R", third edition, 168 pages

Here is probably the world's most complete catalog of Gray and Ductile Iron construction castings. You are cordially invited to request a copy on your company letterhead.

NEENAH FOUNDRY COMPANY • Neenah, Wisconsin
Branch Office: 5445 N. Neva Ave., Chicago 31

cut concrete costs up to 6% . . . eliminate call-backs . . .

Compact sub-base with Maginniss POWR-PACTORS!

Maginniss *vibratory* compaction assures uniform density of sub-base . . . eliminates voids . . . prevents loss of mortar . . . reduces concrete required up to 6%! And, compacted sub-base stops slab settling and cracking . . . eliminates expensive call-backs for repairs.

Find out how Maginniss Powr-Pactors will cut concrete, labor and call-back costs on all your jobs. See your Maginniss distributor today! Maginniss Power Tool Company, 154 Distl Avenue, Mansfield, Ohio.

Maginniss Power Tool Company
154 Distl Ave., Mansfield, Ohio
Yes, I want to know more about the Powr-Pactor for compacting sub-base.
name _____
address _____
city _____ zone _____ state _____

Maginniss POWR-PACTOR VIBRATORY COMPACTOR

AA-7022

MODEL PP-1B POWR-PACTOR. Up to 7,000 vpm, 4,000 lbs. adjustable force, gasoline powered.

(Continued from page 102)

mi. and structure, CR No. 122-A (Pt.) DS-1206 (8) S-1206 (4), Village of Obetz, Franklin Co.;

O.—**Bruns Coal Co., Inc.**, 330½ Market St., Zanesville, O., LB $3,555,676, est. $3,880,500 (7 bidders) Proj. 566, Type T-71, 6.366 mi., USR 51-13.49, F-625 (9) Village of South Point, Lawrence Co.;

O.—**Herman B. Hune**, P. O. Box 284, Marietta, O. LB $1,408,089, est. $1,308,800 (5 bidders) Proj. 570, Type T-71, 5.430 mi. and structure SR 7-(14.03-14.39) (17.71-21.12) F-617 (7), Village of Clarington, Monroe Co. CD 10/20.

▲ **Par-Cox Constr. Co.**, 120 Montgomery St., San Francisco, Calif. LB Est. $4,000,000-$5,000,000, build and lease underground parking garage under Mall, CLEVELAND, O. City of Cleveland, City Hall, Cleveland, O. Bids Oct. 16. CD 9/30.

▲ **ILLINOIS**—Dept. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

Ill.—**Arcole Midwest Corp.**, 3225 Main St., Evanston, Ill., LB $1,084,070 (4 bidders), paving and interchanging ramps FAI-1 east of South Beloit, Winnebago Co., CD 10/17; LB $306,992 (6 bidders), widen and resurf. 1.48 mi. Ogden Ave. between Roosevelt Rd. and Randolph St., in Chicago, Cook Co.;

Ill.—**S. J. Groves & Sons Co.**, 1104 E. Reynolds, Springfield, Ill., LB $2,344,532 (4 bidders), paving, interchange ramps, grade separation structure on FA1-4 near Anna, Union Co.; LB $550,672 (4 bidders), wid'n. and conc. base 4.75 mi. Ill. 3 east of Grand Tower, Jackson and Union Counties;

Ill.—**Clark Brothers**, 304 S. Jefferson, Peoria, Ill., LB $876,145 (12 bidders), paving 6.43 mi. U. S. 24 between Gridley and Chenoa, McLean Co.;

Ill.—**R. B. Potashnick & Regenhardt Constr. Co.**, Cape Girardeau, Mo. LB $834,892 (2 bidders) paving on Washington St. in Cairo, Alexander Co.;

Ill.—**McCann & Co.**, P.O. 201, Springfield, Ill., LB $1,083,896 (3 bidders) surf. course 3.29 mi. FAS 762 from Wood River northeast, Madison Co. CD 10/17.

▲ **George D. Hardin**, 2130 S. Michigan Ave., Chicago, Ill., CA $1,467,900, Calumet Treatment Works, outfall sewer, 127 and Indiana Ave., CHICAGO, ILL. Metropolitan Sanitary Dist. of Greater Chicago, 100 E. Erie St., Chicago, Ill. CD 10/16, under LB.

▲ **S. A. Healy Co. & Gargaro Co.**, 40 E. Seven Mile Rd., Detroit 3, Mich., LB $3,881,000, Contr. PW-2106-outlet sewer, Fredd, Algonquin and Kercheval Aves. from Freud Pumping Station to jct. chamber at Manistique and Kercheval, DETROIT, MICH. City, City-County Bldg., Detroit 26, Mich. Bids Oct. 21. CD 9/18.

BUILDINGS—LB & CA

▲† **Gust K. Newberg Constr. Co.**, 2040 N. Ashland St., Chicago, Ill., LB $21,737,000 (2 bidders), 1,000-bed Veterans HOSPITAL, BRECKSVILLE, O. Veterans Admin., Munitions Bldgs., Wash., D. C. Bids Nov. 4. CD 9/22.

▲ **Dayton Suburban, Inc.**, c/o Cornell Builders, Inc., 9215 Lebanon Pike, Dayton, O., CA Est. $1,750,000, 92 brick, ranch-type HOMES in Brook Haven subdivision on Wilmington Pike, south of Stroop Rd., DAYTON, O. Cornell Builders, Inc., 9215 Lebanon Pike, Dayton, O.

▲ **Summer Sollitt Co.**, 307 N. Michigan Ave., Chicago 1, Ill., CA $6,000,000, 1 story, 500,000 sq. ft. brick, stone, glass exterior walls FACTORY and OFFICE, Wolf and St. Charles Rd., BERKELEY, ILL. Webcor, Inc., 5610 W. Bloomingdale Ave., Chicago, Ill. Fred Stanton, 307 N. Michigan Ave., Chicago 1, Ill., archt. Awarded Oct. 10.

▲ **George Sollitt Constr. Co.**, 109 N. Dearborn St., Chicago, Ill., CA Total est. $3,500,000, 7 story, SOUTHEAST LABORATORY, Harrison St. between Wood and Paulina Sts., CHICAGO, ILL. Presbyterian-St. Lukes Hospital, 1753 Congress St., Chicago, Ill. Bids Oct. 8. CD 10/7.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 18 Iowa November 25 Missouri

STREETS AND ROADS

November 18 Iowa November 25 Missouri

BUILDINGS—BA

▲† **Kan., Topeka**—HOUSING—BA 11/20—Base Procurement Office, Forbes Air Force Base, Section No. 2, 414 units Capehart housing, Forbes Air Force Base. $6,700,000. CD 9/29.

HEAVY CONSTRUCTION—LB & CA

▲ **MISSOURI**—State Hy. Dpt., Jefferson City, Bids opened 10/30,

Mo.—**Reno Constr. Co. and Swenson Constr. Co.**, 135th St. and 69 Hy., Kansas City, Mo., LB $1,250,468 (6 bidders) two-24 ft. concrete pavement 4.018 mi. Boone Co.; LB $102,456 (6 bidders), one 24 ft. concrete pavement 0.843 mi. Boone Co.;

Mo.—**Cameron, Joyce & Co.**, 19 South 7th St., Keokuk, Iowa, LB $788,469 (6 bidders), 24 ft. concrete pavement 6.429 mi., New Madrid Co.; LB $74,553 (6 bidders), 24 ft. concrete pavement 0.591 mi. Stoddard Co.;

Mo.—**St. Louis Co. Bridge & Grading Co.**, 7929 Alabama Ave., St. Louis 11, Mo., LB $2,952,923 (8 bidders), two 24 ft. concrete pavement 8.771 mi., St. Louis Co.;

Mo.—**J. W. Githers Co.**, 501 North 10th St., Poplar Bluff, Mo., LB $110,374 (6 bidders), bit. material surf. 0.945 mi., Howell Co.;

(Continued on page 109)

When this Vassar College power house was designed and built by Lord Electric, the company was already a pioneer in the electrification of public and business buildings. That was

yesterday, in **1908**

today, in **1958**

this company's far flung operations embrace every type of electrical installation. On forward-looking projects such as American Airlines' huge 784,000 sq. ft. jet maintenance hangar at Idlewild, New York, Lord's long experience and advanced methods pay off for owner and general contractor alike.

It's a far cry from the power house above to the bank of oil-filled transformers shown at the right. In this picture our electrician is connecting (three 500 MCM per phase) leads to a 750 KVA 4160 volt primary-277/480 volt secondary transformer.

The next picture shows two of our people on the Spider scaffold mechanism used to install the 100 amp trolley duct which feeds current to operate the great hangar doors electrically.

In the bottom picture Gerard A. Carey, Lord's project foreman, explains the deluge section of the Airport Alarm Board. This board and the system it controls provide instantaneous, automatic safeguards against almost every contingency that can jeopardize such an important and sensitive installation.

Project:
American Airlines
Jet Maintenance Hanger
General Contractor:
Turner Construction Co., Inc.
Architect:
Kahn & Jacobs
Assoc. Architect:
Roy S. Bent
Engineer:
Jaros Baum & Bolles

Lord Electric's long established stature in the industry, its excellent labor relations in all parts of the country, and the tremendous scope of its experience with both government and industry all recommend the company for consideration for your next electrical installation. Your inquiry will receive prompt attention. Please write to Lord Electric Co., Inc., 10 Rockefeller Plaza, N. Y. 20.

LORD ELECTRIC COMPANY, INC.

BOSTON NEW YORK PITTSBURGH PORTLAND, ORE.

Established 1895

THE TAKE-CHARGE D9

—built big and tough for the big, tough jobs

- 320 HP at flywheel.
- 30-ton weight.
- Exclusive Caterpillar oil clutch — plates cooled and lubricated with oil, rarely need adjustment.
- Optional heavy-duty torque converter transmission.
- Heavy-duty steering clutches with finger-tip steering. Power-boosted controls.
- Extra-rugged frame and final drive.
- Massive 7-roller track frame.

These are just the bare facts. No words and pictures can begin to describe the Caterpillar D9 Tractor. Engineered and built to take charge of any job, it's big, tough — and economical in the long run. See what it'll do on *your* job. Have your Caterpillar Dealer put it through its paces. That's all it asks.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

FIND YOUR CATERPILLAR DEALER IN THE YELLOW PAGES

KING OF THE CRAWLERS

(Continued from page 106)

Mo.—Vance Brothers, 4923 Lawn, Kansas City, Mo., LB $103,170 (3 bidders), rolled st. base, bit. surf. 22 ft. wide, 1.303 mi. Taney Co.;

Mo.—Porter DeWitt Constr. Co., Inc., P. O. Box 279, Poplar Bluff, Mo., LB $101,784 (6 bidders), 24 ft. concrete pavement 0.568 mi., New Madrid Co. CD 10/13.

▲† Winston Bros., Johnson, Drake & Piper, Inc., Green Constr. Co., American Pipe Constr. Co., Foley Bros., 301 Clifton Ave., Minneapolis, Minn. CA $25,306,349 (joint venture) constr. power structures, down stream tunnels and liners, Oahe Reservoir Proj., near Pierre, ENG-25-066-59-18, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Oct. 29, awarded Nov. 4. CD 10/31, under LB.

BUILDINGS—LB & CA

▲ Gibson Constr. Co., 5865 Hampton Ave., St. Louis 9, Mo., CA Est. $2,750,000, seven 2-story COMMUNITY APARTMENT BLDGS., incl. 188 dwelling units in 7000 block Weil Ave. and West Side River Des Peres Parkway known as Parkside Apartments, ST. LOUIS, MO. James S. Barnes & Roy Lee Gibson, c/o 5865 Hampton Ave., St. Louis 9, Mo. Raymond X. Grueninger, 7912 Bonhomme Ave., Clayton 5, Mo., archt. CD 7/10.

▲ Allis-Chalmers Mfg. Co., 1126 S. 70 St., Milwaukee, Wis., CA Est. $3,000,000, furnish, install 82,500 KW TURBO-GENERATING UNIT in Sutherland Station power plant, MARSHALLTOWN, IOWA, Iowa Electric Light & Power Co., Security Bldg., Cedar Rapids, Iowa. Constr. by June 1961.

▲ Fischer & Frichtel, Inc., 8703 St. Charles Rock Rd., St. Louis 24, Mo., Owner Builds, Over $2,500,000, 245 RESIDENCES, Chatelaine Sub-Division on Buckley Rd. south Lamary Ferry Rd., ST. LOUIS, MO.

▲ Procon, Inc., 1111 Mount Prospect St., Des Plaines, Ill., CA $3,000,000, OIL REFINERY imprvs., incl. (A) 5000B/D platformer and unifiner; 5000B/D distillate unifiner modernization of gas concentration plant and poly plant units, EL DORADO, ARK. Lion Oil Co., Division of Monsanto Chemical Co., El Dorado, Ark. CD 10/6,† under Monsanto Chemical Co., Lion Oil Division as owner.

▲ Gilmore Constr. Co., 1207 N. 11th St., Omaha, Neb. CA $1,238,200 (11 bidders) gen. constr. CLASSROOM addns. to South High School, OMAHA, NEB. Bd. Educ., 39th and Davenport Sts., Omaha, Neb. Bids Sept. 9. CD 8/12.

▲ Luxury Homes, Inc., c/o Mack Bean Real Estate Co., Boat Club Rd., Fort Worth, Tex. Owner Builds. $1,440,000, 1 story, masonry, concrete fdns., 80 DWELLINGS, Green Field Acres on Boat Club Rd., FORT WORTH, TEX. CD 10/6.

▲ Wilkins Co., Inc., P. O. Box 286, Boulder, Colo., CA $1,559,750, 3 story, 110x180 ft. two wing Methodist HOME for RETIRED, BOULDER, COLO. Rocky Mountain Methodist Homes, 2100 S. Josephine, Denver, Colo. Bids Oct. 31. CD 10/9.

▲ Hubbard Constr. Co., 1507 Delano St., Houston, Tex. CA $1,903,559, Base Bid, Waltrip SENIOR HIGH SCHOOL, Elias Blvd. and 34th St., HOUSTON, TEX. Houston Ind. School Dist., 1300 Capitol St., Houston, Tex. Bids Oct. 21. CD 10/28, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

November 20 Nevada December 3, 4 California

BUILDINGS—BA

▲ Calif., Riverside—SCHOOL—BA 11/26—Riverside High School Dist., 3954 12th St., constr. Rubidoux High School at West Riverside. $1,500,000. CD 9/15.

▲ Calif., Los Padres—MEDIUM SECURITY PRISON—BA 12/17—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, constr. tilt up precast concrete walls prestressed concrete Medium Scurity Prison, State Dpt. Correction, Phase 1 at California Mens Colony, incl. admin. hospital, classroom, dining structure, gate house, 8 housing units, 4 recreation areas, industries shop, laundry, bakery, kitchen, canteen, central tower boilerhouse, warehouse commissary, electrical substation, ground work utilities. W.O. 3721GC-19. $10,000,000. Plans deposit $250. CD 1/10.

BUILDINGS—SLC

▲ Calif., Los Angeles—APARTMENT—At Office Louis Lesser Enterprises, 8737 Wilshire Blvd., Beverly Hills, soon lets contract 13 story apartment, 8440 Sunset Blvd., for Louis Lesser Enterprises, 8737 Wilshire Blvd., Beverly Hills, and Braemar Assocs., 1150 S. Beverly Dr., Los Angeles. $3,000,000. John C. Lindsay & Assocs., 1910 Main St., Santa Monica, and Orr, Strange & Inslee, 3142 Wilshire Blvd., Los Angeles, archts.

BUILDINGS—LB & CA

▲ R. J. Daum Constr. Co. & M. J. Brock & Sons, 12537 S. Cerise Ave., Hawthorne, Calif. LB $4,369,000. (6 bidders) constr. Taft HIGH SCHOOL, Woodland Hills, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Oct. 31. CD 10/13.

▲ E. H. Moore & Sons Constr. Co., 693 Mission St., San Francisco, Calif. CA $1,377,000. John Muir JUNIOR HIGH SCHOOL, SAN JOSE, CALIF. San Jose City Unif. School Dist., 408 Almaden Ave., San Jose, Calif. Bids Oct. 23. CD 10/31, under LB.

▲ E. B. Standish Co., 3550 Union Ave., San Jose, Calif. CA $2,200,000, seventeen 2 story 184 unit APARTMENT BLDGS. Incl. swimming pool, playgrounds, SANTA CLARA, CALIF. Owner, c/o Law Litzie & Assoc., archts., 3304 B. W. Ave., Fresno, Calif.

▲ Stigleauer Bros., 8148 E. Phlox St., Downey, Calif. LB $1,387,600 (7 bidders) constr. North Torrance HIGH SCHOOL addn., Contr. No. 4, TORRANCE, CALIF. Torrance Unif. School Dist., 2385 Plaza del Amo, Torrance, Calif. Bids Oct. 31. CD 9/30.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

November 18 Manitoba

November 19, December 3 Ontario

HEAVY CONSTRUCTION—BA

▲ BRITISH COLUMBIA—B. C. Govt., Parliament Bldgs., Victoria,

Highway Constr. Co. Ltd., Richmond, B. C. and Peter Kiewit Sons Co. of Canada Ltd., 1587 W. 8th St., Vancouver, B. C. LB $1,695,196 (10 bidders), constr. about 5 mi. Trans-Canada Hy., Revelstoke Park-Glacier Park Section 2, Proj. No. 969, Revelstoke Park, Glacier Park area. F. T. Brown, Parliament Bldgs., Victoria, B. C., engr. CD 10/30/46.

▲ Bird Constr. Co. Ltd., Sargent and Erin Sts., Winnipeg, Man., LB $1,585,666 (2 bidders), six bldgs., Air Force Refueling Base, FORT CHURCHILL, MAN. Defence Construction (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Oct. 28. CD 10/6.

▲ Miron Freres Ltee, 2201 Cote St. Michel, Montreal, Que., LB $1,551,791 (5 bidders) sidewalks, curbs and pavements, Metropolitan Blvd., MONTREAL, QUE. Montreal Metropolitan Comn., 506 St. Catherine St. E., Montreal, Que.

BUILDINGS—LB & CA

▲ Thomas Fuller Const. Co. Ltd., 199 Richmond Rd., Ottawa, Ont. CA $7,890,336, 6 story, bsmnt., 4 wing cruciform design, poured concrete fdn., 350-bed addn. MEDICAL CENTER AND HOSPITAL for armed forces, Dpt. Veterans' Affairs and the Royal Canadian Mounted Police, OTTAWA, ONT. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. CD 10/28, under LB.

▲ Magil Constr. Ltd., 400 Gratton St., St. Laurent, Montreal, Que., CA $1,386,000, HIGH SCHOOL, Sherbrooke St. E., MONTREAL, QUE. Montreal Protestant Bd. School Comrs., 3460 McTavish St., Montreal, Que. Awarded Oct. 28. CD 10/28, under LB.

AMERICANS ABROAD

BUILDINGS—LB & CA

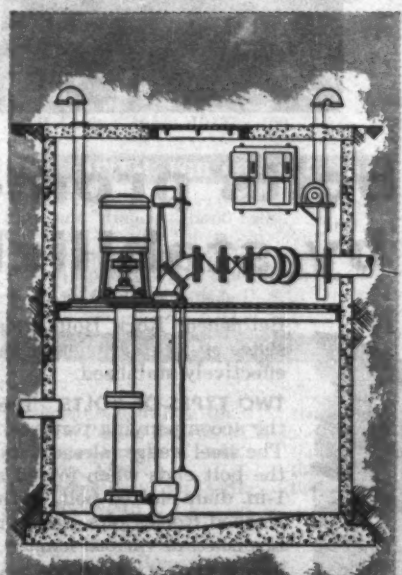
▲† Florida Builders, Inc., 700 43 St., St. Petersburg, Fla., LB $4,694,444 (13 bidders) Base Bid $5,345,957 with addition, 330 units Capehart HOUSING, PANAMA CANAL ZONE. U. S. Eng., Box 4970, Jacksonville, Fla. Bids Nov. 4. CD 9/26.

AUTOMATIC

UNDERGROUND LIFT STATION

with the weil HEAVY DUTY

Vertical Screenless Sewage Pumps



When sewage or drainage water cannot drain by gravity to the main trunk sewer or treatment plant an automatic lift station is required. Illustrated at the left is the most economical installation to build employing the submerged style vertical ejector in the wet pit.

The motor is totally enclosed and equipped with a water-tite conduit box. Float switch, starters, alternator (for duplex units), and disconnect switches are all NEMA-4 water-tite.

The piping is simple and economical. Gate valves may be omitted if necessary. A check valve should be used in a horizontal discharge pipe.

Pit may be constructed of concrete tile. Pit may be as small as 84" diameter. A cover separates the wet pit and the motor room at top and an atmospheric vent pipe runs from wet pit to a point above ground. A ventilating blower may be installed for the upper section of the pit.

For complete specifications ask for Bulletin C-900. Weil Engineers are always available to provide technical information for your special applications.

This NON-CLOG Impeller built into the WEIL Sewage Pump supplies the ideal method of pumping sewage and unscreened liquids containing solids.

weil PUMP COMPANY

1528 North Fremont St. • Chicago 22, Ill.

Bethlehem Rock Bolts are easy to install. Here slotted bolt, with wedge started in slot, is inserted in hole.

Rock bolts promote safety by stabilizing slopes

When bolt is driven with percussion tool, wedge is driven deep into slot, spreading bolt ends. Nut is then tightened with impact wrench.

Bethlehem Rock Bolts greatly reduce the chances of severe rock slides by locking together the stratified rock slabs, so that slopes are effectively stabilized.

TWO TYPES OF BOLTS The Bethlehem Slotted Rock Bolt, shown in the accompanying pictures, is inserted wedge-first in a drilled hole. The steel wedge, already started in the forged, centered slot, spreads the bolt ends when forced against back of hole. In addition to the 1-in. diam slotted bolt, Bethlehem also makes $\frac{5}{8}$-in. and $\frac{3}{4}$-in. diam Headed Rock Bolts, used with an expansion shell. Either bolt can be furnished in various lengths.

ROCK STRATA LOCKED TOGETHER Bethlehem Rock Bolts can be used with steel ties, anchor plate washers, or angle washers. Properly installed, the bolts provide a practical and economical means of locking stratified rock slabs together.

If you want to stabilize a troublesome rock formation, be sure to get in touch with us. All you need do is contact the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

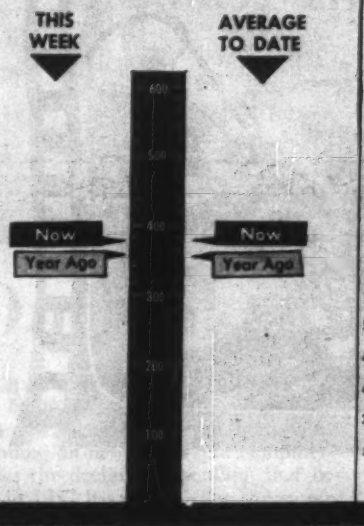
BETHLEHEM STEEL

BETHLEHEM STEEL

Construction Scoreboard

ACTIVITY THIS WEEK

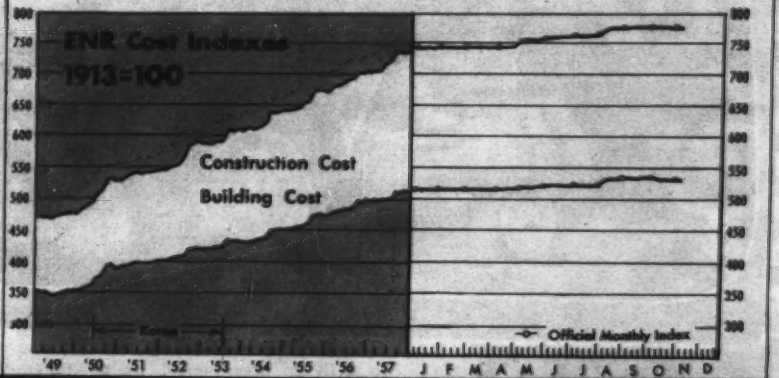
Contract Awards
Millions of Dollars



COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of Nov. 6 1958	% Change from Oct. 9 1958	% Change from Nov. 7 1957
Construction Cost	774.07	−0.14	+5.0
Building Cost	534.91	−0.27	+3.5

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



AMOUNT OF CONTRACTS LET

By Ownership	This Week millions	Cum. 46 wks 1958	Chge '57-'58 %
All Heavy Constr.	$374.3	$17,296.8	+6
Private	123.6	6,935.2	−9
Public	250.7	10,361.6	+20
State & Municipal	197.4	7,718.2	+17
Federal	53.3	2,643.4	+26
By Type of Work			
Public			
Waterworks	3.0	272.9	−16
Sewerage	9.5	527.8	+9
Bridges*	14.7	649.6	+1
Highways	100.7	3,301.6	+23
Earthwork, Waterways	40.2	978.4	+8
Buildings, Excl. Housing	59.1	2,366.6	+13
Housing	13.9	1,006.8	+68
Unclassified	9.7	1,258.1	+35
Private			
Mass Housing	69.5	3,349.1	+22
Commercial	23.4	1,630.1	+4
Industrial	28.3	1,579.1	−45
Unclassified	2.3	366.7	−23

* Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of Nov. 6 millions	Cum. 45 wks 1958	Chge '57-'58 %
Corporate Securities	$79.4	$4,520.9	−13
State and Municipal:			
All Except Housing	123.8	5,488.2	+14
Housing	...	114.5	−27
Federal Loans	1.3	170.7	−6
Federal Aid	...	2,569.0	+20
Total Nonfederal	$204.5	$12,890.5	+3
Federal Appropriations:			
Projects in U. S.	...	$3,946.1	+42
Outside U. S.	...	35.2	+21
Total New Capital	$204.5	$16,871.7	+10

CONTRACTS AWARDED

	Oct. (millions)	1958 10-Mos. (millions)	% Change from 1957 Oct.	% Change from 1957 10-Mos.
Total U. S., ENR reported	$1,621.3	$16,701.0	− 5	+ 6
Private	613.1	6,737.6	−29	− 9
Public	1,008.2	9,963.4	+21	+19
State and Municipal	823.2	7,395.4	+17	+16
Federal	185.0	2,568.0	+42	+27
ENR Volume Index. 1913 = 100	446	552	−12	+ 2

NEW CAPITAL FOR CONSTRUCTION

Total U. S.	$762.8	$16,667.3	−46	+ 9
State and Municipal Bond Sales	493.9	5,479.0	−21	+11
Corporate Security Sales	257.0	4,441.5	−67	−14
Federal Loans, Aid (nonfederal work)	11.9	2,765.5	+52	+18
Federal Appropriations (federal work)	0	3,981.2	....	+42

*Includes funds for outside U. S.

MATERIALS SHIPMENTS

	Unit	1958 July (Jy) Aug. (Ag) Sept. (S)	Cum. (No. of Mos.)	Percent Change from Year Ago Mo.	Cum.
Portland Cement, Bur Mines	thous bbls	34,767(S)	229,282(9)	+14	+ 4
Concrete Paving Awards, PCA	thous sq yd	10,354(S)	94,586(9)	+114	+32
Fabricated Structural Steel	thous tons	314(8)	2,819(9)	− 7	−10
Bookings, AISC	thous tons	256(8)	2,075(9)	+16	−18
Reinforcing Bars, Net, AISI	thous tons	193(S)	1,556(9)	+ 6	−17
Lumber, NLMA	mil fbm	3,058(Ag)	21,598(8)	− 2	− 5
Orders	mil fbm	3,077(Ag)	21,820(8)	+ 4	− 4
Production	mil fbm	2,999(Ag)	21,155(8)	− 3	− 6
Clay Products, Bureau of Census					
Brick, Unglazed, Common, Face	mil bri	631.9(Jy)	3,469.9(7)	+ 4	+ 1
Vitrified Clay Sewer Pipe	thous tons	175.8(Jy)	927.4(7)	+14	− 2
Structural Tile, Unglazed	thous tons	53.9(Jy)	317.0(7)	− 7	−11
Asphalt Products, Bureau of Census					
Asphalt Roofing	thous sales sqs	7,488.5(Ag)	39,931.3(8)	+27	+12
Asphalt Siding	thous sales sqs	109.8(Ag)	638.4(8)	+11	− 4
Aluminum, Wrought, Net, Bur Census					
Sheet and Plate (non-heat treatable)	mil lbs	77.4(Ag)	612.5(8)	− 6	− 8
Wire and Cable	mil lbs	23.6(Ag)	179.2(8)	− 2	− 6
Extruded Shapes (soft alloys)	mil lbs	59.1(Ag)	429.0(8)	+ 4	+0.3

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS	thous	2,928(S)	2,625(9)**	− 3	− 7
Contractor Failures, Dun & Bradstreet					
Number		163(S)	1,634(9)	− 1	+ 5
Liabilities	thous	$7,841(S)	88,803(9)	+40	+ 7

**Average per month

Stretch Dollars – Save Manpower with equipment that does more . . .

WORK BULL 303 and 500 LOADER

—REVERSE INSTANTLY FOR FASTER CYCLING
—PERFORM A DOZEN DIFFERENT JOBS

The Model 210 Davis Backhoe on the Work Bull 303 can dig flush by simply moving the mast assembly from center to side.

POWER MATCHED FOR PROFIT-MAKING PERFORMANCE The Work Bull 303 and 500 Loader rig have been designed to work together as an integrated unit for performance far above anything else in the medium equipment class. With instant reversing (acceleration and direction of travel are controlled by "side-by-side" forward and reverse foot pedals), torque converter, full-time power steering, 5-speed transmission in both directions, plus a 54.5 h. p. engine, you have power, speed, agility all in one package. The 500 Loader has low pivot points for "bull-dozer" type thrust, 43° rollback at ground level for bigger payloads and more breakaway, and telescoping arms for abnormal lifting height.

The Rotary Broom on the Work Bull 303 has 96" swath, 30° left and right hydraulic angle control.

MANY ATTACHMENTS FOR MULTI-PURPOSE, HEAVY-DUTY JOBS This combination lets you get more production out of one machine because it is easily changed from a ⅞ cubic yard Loader to a Rotary Sweeper, Angle Dozer, Lift Fork, Scarifier, Swinging Crane, or Pick-up Sweeper – right in the field if necessary. **The Davis Backhoe attaches directly to the rig – removes in five minutes for all-around operations.**

LOW PACKAGE PRICE This combination will cost you less than any other medium-sized, all-purpose rig. And because of its extreme versatility, maneuverability, and high quality, it will make you more money on a wider range of jobs.

The Work Bull 1001 Multi-Purpose Tractor Loader converts into eight different machines.

OTHER MASSEY-FERGUSON INDUSTRIAL EQUIPMENT includes the Work Bull 1001 Multi-Purpose Tractor Loader (60.3 h. p.), Work Bull 202 (40 h. p.) with integrated Davis Loader-Backhoe, and the Work Bull Fork Lift with 10 easy-to-change attachments.

For information on the complete Massey-Ferguson line ask for Brochure G-4. For specific information on the Work Bull 303 ask for Brochure W-3. Write Massey-Ferguson Industrial Division, 1009 South West Street, Wichita 13N, Kansas.

MASSEY-FERGUSON
INDUSTRIAL DIVISION

Business Changes Its Mind on Spending

LAST SPRING business planned capital investments of $31.3 billion in 1959.

NOW those 1959 plans have been raised to $33 billion.

1960 spending plans are also up—by $2.1 billion.

Outlook: Bigger Outlays Coming

Capital expenditures by U. S. business will be heading up in 1959.

A new survey of preliminary plans for spending on new plants and equipment shows the decline in spending that began in 1957 has ended. The survey was made by the McGraw-Hill Department of Economics.

Present preliminary plans for 1959 call for a rise in spending of only 0.5% over 1958. Plans for 1960 are about the same as for 1959. But experience indicates these plans will be revised upward when final budgets are completed.

For example, when the economy was recovering from an earlier recession in the fall of 1954, business reported plans to spend 5% less in 1955 than in 1954. These plans were boosted as the recovery picked up steam. Actual outlays in 1955 topped 1954 by 7%.

Business has already hiked its 1959-60 plans. Figures in the new survey indicate 1959 spending plans are 5% higher than advance plans reported to McGraw-Hill last spring. And 1960 plans are now almost 7% higher than those reported in the spring survey.

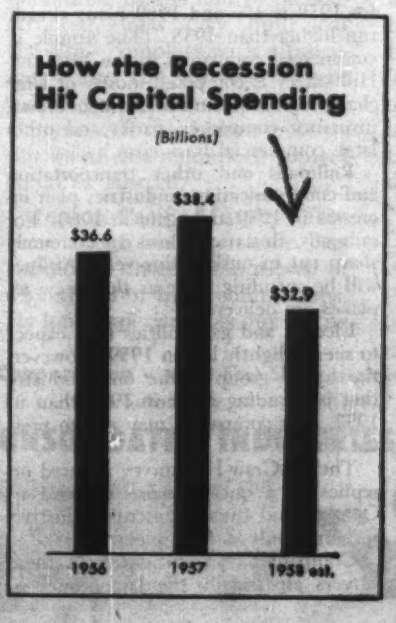
There is still no sign of any real boom in industrial building. And capital outlays have a long way to go before they regain the peak level of 1957, when business spent $38.4 billion. Spending was chopped sharply this year—the estimated total for 1958 being 15% below 1957.

Most industries now have spare capacity. This threatens to hold down the rise in capital expenditures—especially for new plant construction. As a result, capital outlays are likely to be pointed more toward modernization and replacement, rather than toward the building of new facilities.

Manufacturing capacity is now about 50% greater than it was in 1950, earlier surveys by McGraw-Hill indicate. In September, McGraw-Hill estimates, manufacturing companies were operating, on the average, at less than 80% of capacity, despite the steep rise in production since last spring. Companies have indicated they prefer to operate at an average rate of 90% of capacity.

Manufacturing companies as a whole plan to trim capital spending by another 3% next year, after a 27% drop between 1957 and 1958. Largest cuts are planned in metal and metalworking industries, which have particularly large amounts of spare capacity. These industries include nonferrous metals (down 22% for 1959), iron and steel (down 13%) and transportation equipment (down 13%). These cuts follow reduction in capital spending between 1957 and 1958 of as much as 48%.

Some of the process industries also plan to spend less in 1959, giving production a chance to catch up with swelling capacity. Chemical companies plan to reduce spending by 8%, paper and pulp by 6% and petroleum refining companies by 3% below 1958 levels. Textile companies, after cutting capital outlays 35% in 1958, now plan a further drop of 13% in 1959.



• **Bright spots**—The outlook for plant and equipment expenditures in manufacturing has some bright spots. **About half of the major manufacturing industries now plan to lift their spending on capital facilities next year.** And more than half of these industries expect to spend more in 1960 than in 1959. But no manufacturing industry now plans to spend as much in 1959 or 1960 as it did in 1957.

The auto industry plans an increase of 4% for 1959, following a cut of almost 40% this year. Rubber companies expect to spend 20% more in 1959. Companies in the stone, clay and glass group plan an 11% increase. Food and beverages manufacturers report they will spend 10% more.

One interesting feature of the 1960 plans: The machinery industry expects to pass the iron and steel industry in capital spending. If it does, it will rank second only to the chemical industry in expenditures on new plants and equipment.

• **Chance for further lift**—Later revision of plans as final budgets are completed could push manufacturing outlays in 1959 above the 1958 total. It would not take much to wipe out the cut of 3% in present preliminary plans.

There are three reasons for expecting any revisions of the total manufacturing figure to be on the plus side:

• **Improving sales prospects.** Manufacturing companies as a whole look for a 9% rise in physical volume of sales in 1959. (Price increases could add to

Capital Spending Plans by Industry

INDUSTRY	1957 Actual*	1958 Estimated*	1959 Planned	1958-59 % Change	1960 Planned
ALL MANUFACTURING	$13,647	$10,009	$9,678	—3%	$9,455
Iron & Steel	1,864	1,389	1,043	—13	1,043
Nonferrous Metals	280	210	206	—22	295
Machinery	1,255	1,023	1,031	+ 1	1,099
Electrical Machinery	595	517	507	— 2	585
Autos, Trucks & Parts	1,058	648	672	+ 4	645
Transportation Equipment (aircraft, ships, RR equip.)	566	408	335	—13	359
Other Metalworking	948	729	737	+ 1	722
Chemicals	1,724	1,400	1,288	— 8	1,211
Paper & Pulp	811	602	566	— 6	634
Rubber	208	154	163	+20	187
Stone, Clay & Glass	572	404	447	+11	461
Petroleum Refining	885	605	588	— 3	623
Food & Beverages	1,001	737	813	+10	800
Textiles	408	264	229	—13	273
Miscellaneous Manufacturing	987	828	841	+ 2	720
Petroleum Industry	5,792	3,158	3,442	+ 6	5,439
Mining	430	423	376	—12	323
Railroads	1,396	781	774	+ 3	937
Other Transportation & Communications	4,604	4,141	4,275	+ 3	4,414
Electric & Gas Utilities	6,197	6,280	6,103	— 3	5,693
Commercial (1)	7,199	5,654	5,962	+ 4	6,823
ALL BUSINESS (2)	36,437	32,852	33,022	+ 0.5	32,661

*U. S. Department of Commerce, Securities and Exchange Commission, McGraw-Hill Department of Economics

(1) Figure based on large chain, mail order and department stores, insurance companies, banks and other large commercial businesses

(2) Petroleum refining, included under both manufacturing and petroleum industry, is counted only once in the total

the rise in dollar terms.) Expected increases run as high as 26% over 1958 levels in the iron and steel industry and 20% in the auto industry. A sizeable climb in sales would narrow the present gap between capacity and operating rate and put pressure on companies to add more capacity.

• **Better financial position.** Rising sales are bringing wider profit margins. Also, depreciation allowances are moving up steadily because of large installation of new plants and equipment in recent years. Plans for capital outlays in 1959 are now less than manufacturing companies will be charging off in depreciation.

• **The need for new facilities to produce new products and utilize new processes.** Industry is now investing more than $8 billion a year in research and development. It expects before long to see this investment pay off in new products and improved methods.

In nonmanufacturing industries, present plans already call for a rise in capital spending next year. Plans for 1960 also top the total now estimated for 1958.

Largest increase in outlays will be in the petroleum industry, according to present plans. But the increase will come almost entirely in production—that is, oil well drilling. Expenditures for oil pipelines and facilities for refining and marketing will be off slightly.

Commercial businesses also expect to spend more. The increase now planned for 1959 is 4% and 1960 plans already run higher than 1958. (The sample of commercial companies in the McGraw-Hill survey is composed mostly of large chain, mail order and department stores, insurance companies, banks and other large commercial businesses.)

Railroads and other transportation and communications industries plan increases in 1959 and again in 1960. For railroads, this rise follows an extremely sharp cut in outlays this year. Airlines will be spending more as their new jet planes are delivered.

Electric and gas utilities now expect to spend slightly less in 1959. However, the utility group is the only industry that is spending more in 1958 than in 1957. Gas companies may add to present plans.

The McGraw-Hill survey is based on replies to a questionnaire received in October and thus represents industry's thinking only a few weeks ago.

Companies that participate in these surveys are usually the larger ones in their industries. This may affect the results of the survey. However, more small and medium-sized companies are included in this survey than in any previous year. Companies included in the industrial sample employ nearly 9 million workers, about 40% of total industrial employment.

Wider Powers

All Missouri cities must obtain state approval of sanitary sewer construction

All local governments in Missouri must now obtain permission from the state before constructing, installing or modifying their sewerage systems.

Attorney General John M. Dalton says such facilities are "no longer a matter of sole concern to constitutional charter cities. They are a part of a system for disposal of sewage and . . . their construction is a matter of general state concern."

Until the recent ruling, constitutional charters of municipalities superseded state law for municipal functions. Now the Water Pollution Act of 1957 will apply to all public and corporate bodies, partnerships and other unincorporated associations without exception. The act set up a Water Pollution Board empowered to control and regulate discharge of impure matter into water supply and streams.

Under the new ruling, permits for sanitary systems must be obtained from the state Water Pollution Board. In addition, the board may call for submission of plans, specifications and all other information if it thinks discharge of impure matter into any of the state's water supply and streams would constitute pollution.

The ruling came after a question on the subject was raised by the Kansas City Director of Public Works.

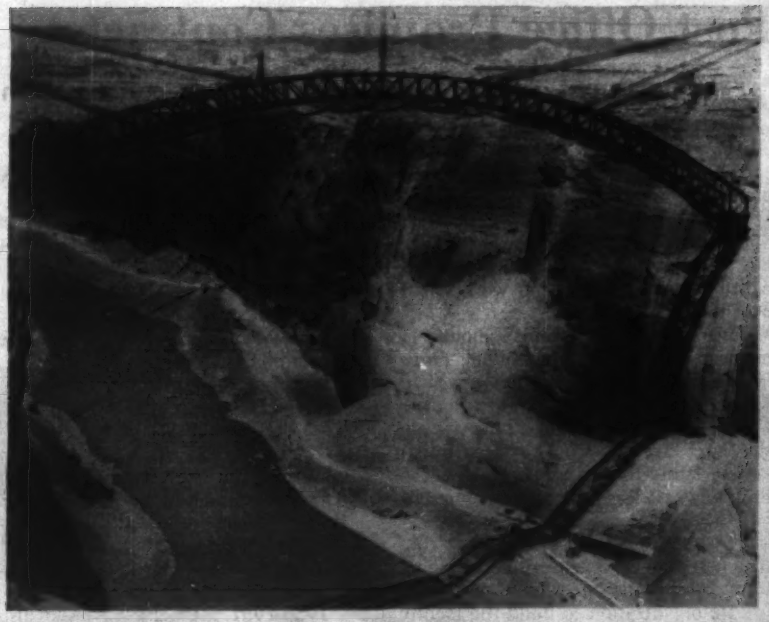
Truck Mix Companies Must Pay Sales Taxes

Transit mix concrete companies are subject to the California sales tax because they are not contractors.

This ruling, by a Court of Appeal at Sacramento, Calif., reversed a Superior Court decision that brought a refund of $27,904 in sales taxes to Hayward Building Material Co., Hayward, Calif. The state had collected that amount on sales of asphalt and transit mix concrete by the Hayward company. The State Board of Equalization, which administers the sales tax, appealed the lower court's decision.

(*B&F continued on page 116*)

· YUBA PROGRESS REPORT ON GLEN CANYON



Glen Canyon Bridge in Arizona is scheduled to be open for traffic in February, 1959. Fabricated and assembled at the plant, the span measures 1028 feet from pin to pin.

PROBLEM: Build a Bridge Fast in the Middle of Nowhere

Fast-moving crews of a Yuba subsidiary—Judson Pacific-Murphy Corp.—made the final closure on the world's highest arch bridge in August, five months ahead of schedule!*

Key part of a multi-million dollar dam and bridge project, Glen Canyon Bridge rises nearly 750 feet above the Colorado River—some 60 feet higher than the towers of the Golden Gate Bridge.

Unusual problems were created by its remote location, 76 miles from the nearest small town, and by scorching 115° desert temperatures. Roads had to be constructed, a new "city" built near the site—complete with all services—and the world's longest footbridge stretched across the Canyon. All this before erection phases of this mammoth project could be started.

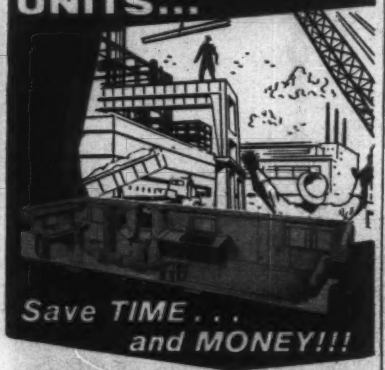
Judson Pacific-Murphy takes these tough ones in stride, has racked up an enviable record of way-ahead-of-time completions. Its long experience as one of the largest fabricators and erectors of structural steel is backed by a wealth of advanced methods, large and fully integrated facilities and unusually skilled crews. This, together with a know-how and ingenuity in the specialty of bridge building, has contributed to a widely recognized position of leadership and scores of outstanding successes.

**Judson Pacific-Murphy is the sponsor of a joint venture composed of the Judson Pacific-Murphy Corporation and Peter Kiewit Sons Company. Venture name is Kiewit-Judson Pacific-Murphy.*

Judson Pacific-Murphy Corporation · 4300 East Shore Highway, Emeryville, California
a Subsidiary of

YUBA CONSOLIDATED INDUSTRIES, INC.

MOBILE OFFICE UNITS...



Save TIME . . . and MONEY!!!

MOBILE OFFICE Units are low in cost . . . Built to your specifications . . . There's a unit to fill your every need.

Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation.

These units are economical, time saving, rugged and durable. They are self-containing, and are available with air-conditioning, and can be fitted to your specifications.

MOBILE OFFICES are being used by major contractors and other major businesses throughout the United States. In every case they have proven their worth.

Remember, whatever your needs may be, a MOBILE OFFICE Unit can be built to fill your requirements.

If it's Mobile...We Build It!

MOBILE OFFICE, INC.

7316 Stony Island Ave. Chicago 49, Ill.

DON'T RISK THIS

INSIST ON RUGGED LOUISVILLE LADDERS

Don't take chances with "price" ladders. Step up with confidence on UL-approved *Louisville* aluminum ladders, planks and stages—*the equipment with safety built-in!* Check the yellow pages for nearest distributor, or write us direct.

BUILT-IN SAFETY

Exclusive *Louisville* "boss" rung-to-rail assembly insures against ladder sway and rung turning and loosening. Ask your *Louisville* distributor to demonstrate.

Round Peg in "Hex" Hole Riveted to Rung.

LOUISVILLE LADDER COMPANY

Post Office Promises Contracts

Department plans $80 million in construction during 1959; many bid calls due by January

The U. S. Post Office Department plans to start construction of close to $80 million in new facilities in 1959. Spokesman told ENR the Post Office has several hundred million dollars worth of new construction work slated over the next few years.

The department wants about 45 major projects built now. They range in size from 200,000 sq ft of space to 1,000,000 sq ft. It also wants another 10,000 smaller post offices built within the next five years. The department says it wants to move to new, modern buildings as leases expire on present facilities.

The new buildings will be constructed under the government's long-term lease program, which permits a private organization to build the facility to Post Office designs, then lease it to the government.

Within 30 days the Post Office will call for lease-bids on a $2 million facility in Spokane, Wash. By January or February it will call for bids on a similar size job in Oklahoma City. By next March the department plans to get bids on a $20 million post office complex in Detroit.

Other 1959 post office projects include:

- A $1 million to $2 million facility at the Los Angeles Airport.
- A 250,000 sq ft facility in Portland, Ore.—estimated to cost from $4 million to $5 million.
- A 300,000 to 350,000 sq ft post office in Cincinnati.
- A 250,000 to 300,000 sq ft office in Columbus, Ohio.
- A half-million sq ft facility in Oakland, Calif.

The Post Office also hopes to add from 600 to 800 smaller units during this fiscal year. It already has over 100 of these under way.

Being pushed, but not likely to start next year, is an $8 million to $10 million office in New York City. Plans now call for completion of this facility by 1960-1961. Philadelphia is also slated for a major new post office, with an outside chance it may get under way next year.

Sites are being acquired now for new offices in Omaha, Buffalo, Birmingham, Mobile and Chattanooga. Projects are also planned for Houston, El Paso, Boston, St. Louis, Atlanta, Savannah, Jacksonville and Harrisburg. The department says almost every major city in the country needs more post office space.

New Law Could Aid Dambuilding

Several million dollars in new flood control and water supply projects in North Carolina may be at stake when the legislature convenes in January.

Under the state's constitution, county and city governments are prevented from spending money individually, or as a group, for flood control and water supply construction. These expenditures are up to the legislature.

Local government may ask the legislature to authorize a community referendum on spending for flood control and water supply construction.

Several cities and towns in the northwestern part of the state plan to ask the legislature to amend existing laws so as to permit community and county spending for such purposes.

The communities want to construct a dam on the Yadkin River about three miles above Wilkesboro. But the project is blocked because of the constitutional barrier. The Corps of Engineers estimates the dam would cost $8 million to $9 million.

The northwestern communities have received pledges of support from other sections of the state. Given the law, many other areas hope to embark on their own flood control and water supply projects.

Crane, Shovel Group Seeks Standardized Ratings

Power crane and shovel manufacturers think equipment standards would eliminate "confusion in the industry."

The Power Crane and Shovel Association pushed that idea at its recent meeting in Chicago. New ratings would be based on maximum rated load with a standard minimum rating radius for each size of machine. The standards would be applied to both rubber-tired and crawler mounted cranes. The group also considered standardizing air and manual crane controls where possible.

Also discussed were ways of solving problems arising from government disposal of surplus equipment.

Want a permanent drainage structure?

Use Corrugated Metal

How long does a Corrugated Metal Drainage Structure last? Nobody can tell you for sure. Since the time the first Corrugated Metal Culvert was developed in 1894, many thousands of feet of Metal Drainage Structures have been installed, and some of the early structures are still in use. Often, individual structures outlasted the need for drainage, so they were removed and installed in other locations.

Information which has been developed from field inspections of existing drainage applications proves that Corrugated Metal Drainage Structures are durable from the important strength and material standpoint and will give long and satisfactory service in modern construction.

Write for our free booklet "USS Culvert Sheets" which tells you how to get the kind of service you can expect from Metal Drainage Structures made from USS Galvanized Culvert Sheets. It's loaded with information about selection of correct structure sizes, preparing foundations and installation procedure.

For your free copy, write to United States Steel Corporation, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

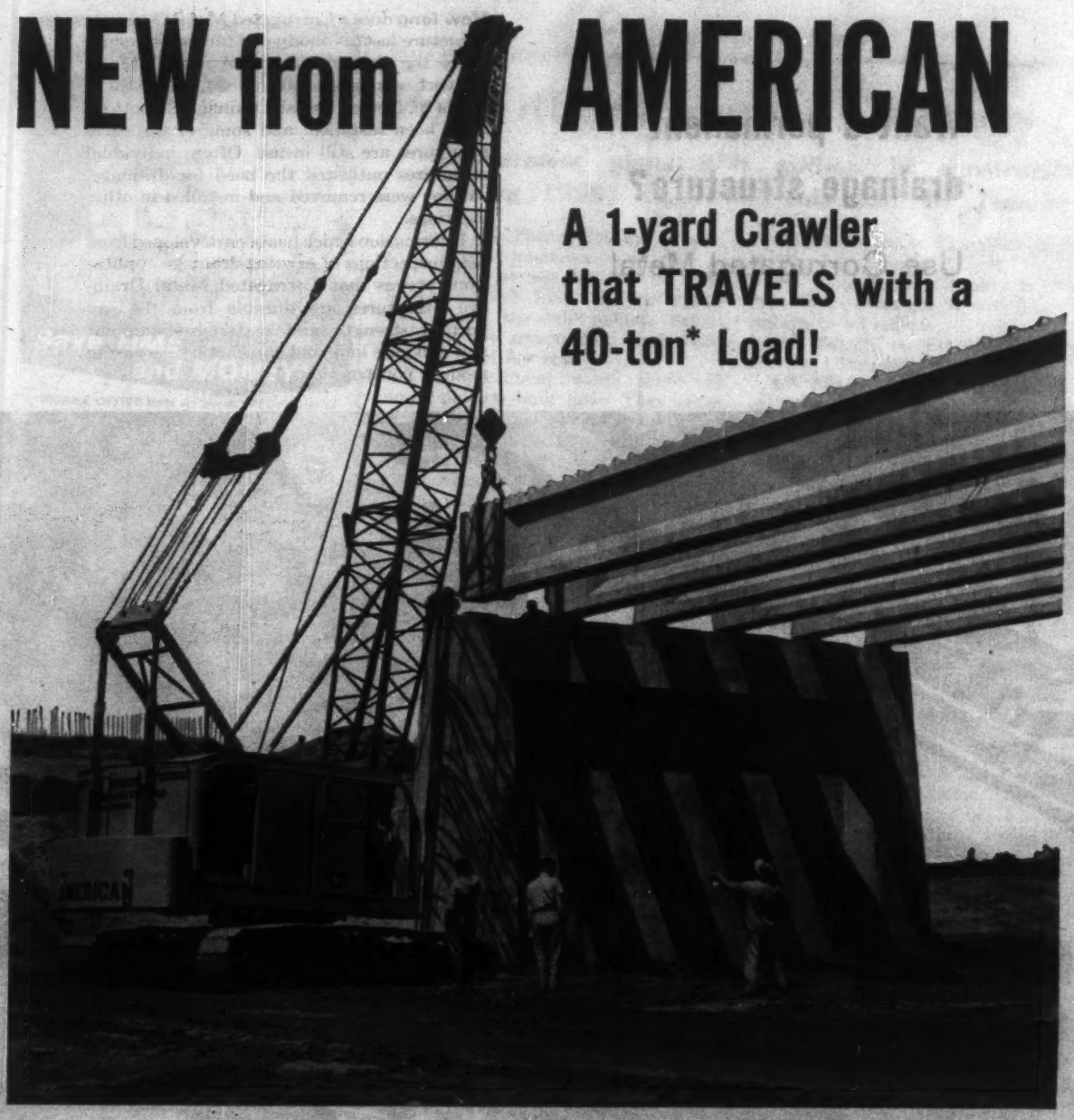
USS is a registered trademark

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

USS **United States Steel**

NEW from AMERICAN

A 1-yard Crawler that TRAVELS with a 40-ton* Load!



It's Another AMERICAN First!

Exclusive extendable crawler side frames that let you: Haul—Travel—Work at 11-foot width on routine jobs, Travel—Work at 13-foot, 10-inch width for heavy work!

For excavating work, American 500 Series Crawlers offer 1-yard capacity with shovel or backhoe . . . 1½-yard capacity with clam or dragline. It's a 40-ton capacity crane for steel erectors.

Distributors have complete details on dozens of special features offered in this new crawler line. Investigate the 500 Series and the complete American line with capacities that start at ½-yard, 12½ tons.

*Rated at 75% of tipping in accordance with U.S. Department of Commerce Commercial Standard CS90-58.

EXCAVATORS - CRANES to 2 yds.- 90 tons
LOCOMOTIVE CRANES to 130 tons
DERRICKS - HOISTS to 800 tons
REVOLVER CRANES to 400 tons

AMERICAN HOIST and Derrick Company
St. Paul 7, Minnesota

AMERICAN HOIST PACIFIC COMPANY — Special materials handling equipment

CROSBY-LAUGHLIN DIVISION — Drop forged fittings for wire rope-chain

AFL-CIO Takes the Offensive

Executive Council eases up on two construction unions and takes another look at corruption and legislation

AFL-CIO officials are relaxing their anti-corruption timetable to give two building trades unions a breathing spell.

The federation's Executive Council, meeting in Washington, D. C., last week, decided not to press charges now against the United Brotherhood of Carpenters and its president, Maurice Hutcheson. The labor leaders also voted to extend the probationary period of the International Union of Operating Engineers because of "excellent progress" in its clean-up campaign.

The two actions are part of a newly relaxed attitude about the racketeering issue following last week's elections. Results indicate the public doesn't hold corruption against labor as a whole, AFL-CIO President George Meany says.

Labor's successful get-out-the-vote campaign helped defeat five of six proposed right-to-work laws (see p. 120) and elect a larger Democratic majority to Congress. The returns have prompted labor officials to demand their type of labor legislation in the next Congressional session. They're also expected to slow-up their punishment of labor unions allegedly violating the union's ethical practice rules.

This doesn't mean the anti-corruption drive will be dropped. However, there will be less public emphasis on the corruption issue. The AFL-CIO will move more quietly in pushing the clean-up.

• **Corruption**—The AFL-CIO strategy developed in last week's meeting produced these results:

• Carpenters President Maurice Hutcheson was "invited" to attend the council's next session in February, or any time on "one week's notice." The council wants Mr. Hutcheson to explain charges against him in an Indiana land buying scandal and to explain his refusal to testify before the McClellan anti-racketeering committee. His failure to put in an appearance at that session was excused on the grounds of carpenter union business.

• The International Union of Operating Engineers, reporting on clean-up orders of the Ethical Practices Committee, won the council's reprieve because of the "considerable progress" made. According to AFL-CIO President Meany, the engineers are moving toward complete compliance with the Ethical Practices Code. President William E. Maloney resigned while the union was under McClellan committee attack.

To help out the engineers in one trouble-spot, Long Island Local 138, Mr. Meany has named an "international supervisor" to watch over the union. He is a retired former organizer, William Collins, of New York.

Mr. Meany said he named Mr. Collins at the engineers' request. Local 138, he explained, was divided into two factions that prevented either side from appointing or accepting the other's agent. They therefore asked for an outside supervisor.

While Mr. Hutcheson failed to appear at the council meeting, he did send some material that is being distributed at the union's convention this week. The material attempted to explain his McClellan committee appearances and other matters. The council did not assess the information.

• **Politics**—There's no doubt that labor leaders view the election returns as an indication they're almost off the spot on racketeering. Within the past two years, the Executive Council's action on the carpenters, at least, would have been less lighthearted.

The same attitude prevails when it comes to handling racketeering by legislation. They were on the defensive until November 4, now they are demanding that Congress pass a bill milder than the Kennedy-Ives labor control measure that failed last session.

With a liberal Congress coming in and the right-to-work drive now dormant, they feel the time is ripe for this type of offensive campaign. And they hope the passage of such a bill will soothe the public and dull the interest in union corruption.

Mr. Meany also talks of a major overhaul of the Taft-Hartley Act, including repeal of the section that now permits the states to pass right-to-work laws banning union security agreements. That is the section known as 14(b). But privately labor sees little chance of any drastic revisions in the law next year. It needs more time for the public to forget the corruption issue.

New Hiring Plans for Plumbers

The plumbers and pipefitters union came up with five hiring plan proposals for the construction industry last week.

The proposals, which have been sent to all local units of the international union, would alter the industry's traditional hiring methods. These were ruled illegal by the National Labor Relations Board in a sweeping decision known as the Mountain Pacific case.

All of the plumbers' proposals are based on the hiring of experienced craftsmen. Each plan seeks to assure that hiring will be done in a way that can't be characterized as discrimination against nonunion workers.

The first plan calls for a rotation system of hiring. Under this plan, contractors would agree to employ experienced journeymen only and the union would refer craft workers on a first-in-first-out basis for those out of work. It's also suggested that seniority employees be given priority.

The second plan calls for hiring by rotation, based on both experience and results of formal examinations.

A third plan covers the situation where journeymen directly solicit work at the job site. The local union would seek recognition as exclusive bargaining agent and would insist on a union shop clause in non-right-to-work-law states.

The other two proposals suggest two types of seniority referral plans that would give union members considerable protection.

Plumbers union President Peter T. Schoemann says the international union is not "compelling our local unions to adopt these hiring plans and clauses." He suggests, however, that they be used as guides to avoid the severe penalties of the Brown-Olds rule, which the NLRB is now applying in violations.

The plans were developed by the union's general counsel, Martin F. O'Donoghue, and attorneys for various employer trade associations that hire workers in the plumbing trades.

None of the plans can be adopted unilaterally by a local union. Contractors are as liable as unions for closed shop violations. Any acceptable hiring plan must be one of mutual agreement.

(Labor continued on page 120)

Freedom in Labor Relations

Open shop contractor association defends the right of management and labor unions to "live and let live"

How many labor problems in the construction industry are caused by wilful violation of the legal rights of others or by ignorance of the law?

A lot of them.

At least that's the impression received in Atlantic City last week by those who attended the first convention of the Associated Builders and Contractors of Maryland, Inc.

What's the answer?

One convention suggestion to contractors was this: Be fair, be honest, know what the law is, defend your rights and fight unlawful force. Correlative advice to unions was to live within the law and to honor and respect the obligations imposed by law for the protection of nonunion workers and the public.

Most of the convention labor talk related to two propositions. One was that contractors have the right to conduct their own affairs free from unlawful union pressures. The other was that construction workers have the right to choose or to reject union representation without coercion from labor or management. The sum of the two is the ABC labor relations philosophy of "live and let live."

• **Secondary boycotts**—But the answer sometimes is not that simple. A good example lies in the complex realm of secondary boycotts. National Labor Relations Board General Counsel Jerome Fenton spoke on that subject at the convention.

Secondary boycotts, as most contractors know, do constitute unlawful union pressures and often violate the rights of nonunion workers. And whenever the existence of such a boycott is established, the NLRB or a court has necessarily found that the union intended to break the law.

But in the construction industry there are several complicating factors. Mr. Fenton called the industry a "natural" for the development of secondary boycotts because of the multiplicity of employers and unions often working at the same site. Their interests, he said, are "separate but not quite separable" and this is "the root of our problem." It becomes difficult to isolate employees of neutral employers from labor disputes. Union objectives become easily confused.

Another problem is the legal necessity of "balancing the interests" of employers and unions under the law. Unions have the right to strike, Mr. Fenton said, while "unoffending" employers and the public have a right to be shielded from the pressures of labor controversies "not their own." And in construction cases it's often a tough job to decide when the former impinges more than "inadvertently" or "incidentally" on the latter.

Under Mr. Fenton's analysis, the ultimate test of legality is the lawfulness of the union's objective. Unions may have the right to strike and to organize new members but they don't have the right, in Mr. Fenton's words, "to force the employer, or in fact anybody, to boycott someone else." The question of union intent becomes the key in applying the test.

The courts and the NLRB have developed a number of rules of thumb to use in making the test. But, Mr. Fenton says, a lot of confusion still remains and the ban on secondary boycotts has, at best, produced a "sea of troubles."

• **Fair play**—ABC, which has had more than its share of nationally known boycott cases, places the same emphasis on motive and intent. It has fought since 1953 to maintain the right of employers "to be free from secondary boycott pressures and the right of their employees not to be forced into the union involuntarily."

One of the leading complaints aired at the convention by ABC labor relations counsel Earle K. Shawe is a union inclination to disguise boycott activities as "organizational picketing," even where the actual effort is one to organize employers rather than employees. Mr. Shawe noted that construction unions often operate in "direct contradiction of the fundamental rights" guaranteed by law and employees are sometimes forced to join a union "whether they want to or not."

In order to help contractors determine the legal rights and obligations of labor and management, Mr. Shawe offered these suggestions:

• Employees have the right to decide freely whether to unionize or not. If a union is properly selected, the employer must deal with it in good faith.

• A contractor can't legally agree to a union contract unless the union represents a majority of the employees.

• A union can't legally represent employees until it is properly designated as a representative of a majority of the employees.

• A contractor can't threaten or coerce employees or spy on unions.

• Not even a union employer has to accede to unreasonable or illegal demands.

• Know the problems of your employees and treat them fairly.

These are some of the basic tenets in what Mr. Shawe calls the fight for the "right of freedom in the field of labor-management relations."

ABC is a 575-member association of general contractors, subcontractors and suppliers in the commercial and industrial field. An estimated 80% of its members are open shop. The association is headed by Larry S. Best of Baltimore's Wildberger-Best Construction Co.

Long Strike Settled in Toronto

Toronto builders and construction workers have resumed work on $100 million of construction after ending a six-week strike and lockout.

The Toronto Builders Exchange has reached agreement with the carpenters, rodmen and operating engineers; but the cement masons remain on strike.

The carpenters union won hourly wage increases totaling 45 cents over a three year period. The increase is payable in four installments—15 cents now, 15 cents next year, 10 cents May 1, 1960 and 5 cents November 1, 1960. This will bring their hourly wage to $2.95 as of November 1, 1960. Terms of the other two agreements have not yet been announced.

The cement finishers struck on September 11 because of a dispute over starting time. They asked for a shift starting at 8 AM instead of the present 2 PM. Contractors refused, saying it would increase costs more than 40%. Cement finishing work, they said, is usually not ready until afternoon.

The Toronto Builders Exchange closed down all work on September 22 after members of other unions refused to cross the masons' picket lines.

The shutdown was lifted on five projects two weeks ago, however, for "humanitarian, health or safety reasons." The projects included school, hospital and power plant construction.

The cement masons are not expected to use picket lines now unless nonunion finishers are allowed on the jobs.

Voters Take the Union Side

Rejection of right-to-work proposals in five states may shut the door to labor legislation sought by employers

Organized labor won a moral and political victory last week.

The overwhelming defeat of right-to-work proposals in five of six states is bound to undercut—at least for the immediate future—efforts to get more restrictive labor legislation.

Right-to-work proposals were swept aside in California, Ohio, Washington, Idaho and Colorado by margins that stunned their proponents and surpassed the hopes of union leaders. Predominately rural Kansas stood alone in adopting a right-to-work measure. Paradoxically Kansas made George Docking the first Kansas Democrat ever to be re-elected to a second term as governor.

In the wake of the defeat, it's clear the issue gave labor a rallying point for highly effective political action. It helped create political Waterloos for such Republican stalwarts as California's William Knowland and Ohio's John Bricker. And it helped elect to Congress the largest number of Liberals since the war. (The Democrats picked up 13 Senate seats and 46 in the House, giving them a Senate margin of 28 and a House advantage of 130.)

• **The implications**—The results of the right-to-work campaign have far-reaching implications.

The defeat promises to check the right-to-work movement at the state level and to spark new efforts to repeal such laws already on the books. Indiana Democrats, who elected their first U.S. Senator in two decades, are already talking up repeal of the Indiana law.

The defeat also has renewed labor's hopes that Congress might be induced to kill the right-to-work movement entirely by a simple amendment to the Taft-Hartley Act (see p. 119). And it has raised serious obstacles to the passage soon of any restrictive labor legislation at the national level.

Of deeper significance, perhaps, is the possible interpretation of the defeat as a vote of confidence in organized labor itself—a vote that may easily prick the anti-labor bubble blown by the McClellan committee.

A possible interpretation of the vote is this: Labor showed no signs of revolting against its leadership; independent, residential voters appeared disinclined to change the labor movement as they have come to know it. Even small town and farmer citizens appeared less concerned about labor and unions than about the high-powered campaigns against the union shop.

• **What the laws do**—Right-to-work laws, already in effect in 18 states, ban the union shop (not the closed shop, which has long been illegal anyhow). The common union shop clause in labor contracts requires a nonunion worker to join a union after he's been on the job for 30 days—it doesn't and can't require him to be a union member to get a job.

Organized labor claims the laws weaken and destroy the bargaining power of unions and tend to lower the wages and working conditions of all workers.

In the construction industry, the laws would ban pre-hire contracts even if they are legalized by Congress, outlaw secondary boycott activity aimed at nonunoin workers, restrict union organizing efforts and further confuse current efforts to clean up industry hiring practices.

• **The vote**—The most decisive votes against the November 4 proposals came in the more heavily industrialized states of California and Ohio, where the campaigns were also the most expensive and the most bitter. Here, the proposals were defeated by a vote of 2 to 1. Estimated cost of the campaigns was close to $2 million in each state.

Based on late but incomplete returns, the right-to-work vote by states shaped up like this: California—1,304,000 for and 2,106,000 against; Colorado—200,000 for and 316,000 against; Idaho—118,000 for and 124,000 against; Kansas—370,000 for and 280,000 against; Ohio—1,158,000 for and 1,987,000 against; Washington—311,000 for and 547,000 against.

Temporary Heat Pact Revision

Union plumbers and contractors are trying to work out a new agreement to forestall labor problems in the heating and cooling of buildings under construction.

A 10-man subcommittee of the Joint Industry Program Committee met in Washington, D. C., last week to begin drafting the new pact. The group represents the plumbing, heating and air conditioning industry.

The objective is to modernize what is known as the "Pittsburgh temporary heat agreement" so that it covers cooling and refrigeration as well as heating work. Represented on the subcommittee are the plumbers' union, the National Association of Plumbing Contractors and the Mechanical Contractors Association of America.

The 34-year-old agreement was negotiated by the plumbers union and several contractors' groups. It was approved by the National Board for Jurisdictional Awards in 1924. The agreement grants jurisdiction over temporary heating in buildings under construction to steamfitters up to the point when the owner accepts the heating system. It was aimed at jurisdictional disputes between operating engineers and steamfitters and became the pattern for similar agreements throughout the United States.

Besides extending the 1924 agreement to cooling and refrigeration, the subcommittee will attempt to cover all problems in temporary heating that have arisen since that time. The subcommittee has invited members of the NAPC and other participating associations to submit case histories and recommendations.

NAPC says contractors stand to benefit from the new pact in three ways:

• Jurisdiction of the work remains in the hands of their regular employees.

• They can operate without fear of jurisdictional disputes from outside crafts not associated with the construction or installation of plumbing, heating or cooling equipment.

• They cannot be required to pay excessive or premium labor rates for stand-by maintenance service. Shift time and straight time are specified in the agreement for such work.

Builders Claim $75,000 Lost in Work Stoppage

A Wichita, Kan., shopping center owner and the contractor have sued eight labor groups for $75,000 in the Wichita Federal District Court.

The plaintiffs, Parklane, Inc. and Construction, Inc., asked damages for a 60-day construction delay. They say it was caused by work and materials-handling stoppages in violation of the National Labor Relations Act. The result, they contend, was increased construction costs and inability to meet contract dates set for occupancy by tenant stores.

(Labor continued on page 122)

NLRB General Counsel Helps the Joint Board

The National Labor Relations Board general counsel is giving his full support to the NLRB's current approach to jurisdictional disputes.

Counsel Jerome Fenton has refused to process a work assignment dispute over which the National Joint Board for the Settlement of Jurisdictional Disputes has control. The action was taken in an administrative decision upholding the cancellation of a Section 10 (k) hearing and dismissing an unfair labor practice charge against a union.

This means that if a contractor has voluntarily submitted a dispute to the Joint Board or has otherwise agreed to follow the board procedure, the general counsel will not issue a complaint based on an unfair labor practice charge filed by the contractor against any of the 18 AFL-CIO building trades unions.

Industrialist Opposes Labor Anti-Trust Laws

A strong plea against the use of anti-trust laws as a device for curbing union corruption and abuse of union power came last month from the president of Inland Steel Co.

In an address before the American Bakers Association, William G. Caples suggested, instead, that unions be chartered as legal entities. Under this procedure, he said, the interests of workers could be protected.

"If unions are a healthy thing in our society, and I believe them to be," he said, "then we cannot apply the anti-trust laws to unions, for to do so might destroy them."

Chartering of unions, according to Mr. Caples, would accomplish a number of things, including some regulation of union constitution and by-law provisions.

New Plan: An Hour a Day For the Community Chest

Building tradesmen in Youngstown, Ohio, have a chance to contribute to the Community Chest through a novel plan.

Because the seasonal nature of their work makes payroll donations impracticable, labor representatives have proposed a nine-hour work day for Thanksgiving week. Pay for the extra hour per day would be forwarded to the Community Chest by the employer in the worker's name.

Thanksgiving week was chosen because it has only four days. The plan must fall within such a week to avoid violating wage and hour provisions.

OFFICIAL PROPOSALS

Bids: December 18, 1958.

Sewage Treatment Plant Additions and Alterations

Pursuant to a resolution adopted October 30, 1958 the Board of Commissioners of the City of Trenton will receive at its regular meeting to be held on Thursday, December 18, 1958, at 2:00 P. M., in the Commission Chamber, City Hall.

SEALED PROPOSALS FOR FIVE SEPARATE CONTRACTS FOR THE CONSTRUCTION OF ADDITIONS AND ALTERATIONS TO THE SEWAGE TREATMENT PLANT, AT WHICH TIME AND PLACE SAID PROPOSALS SHALL BE PUBLICLY OPENED AND READ ALOUD.

Contract G, the General Contract, comprises all equipment, labor and materials required for constructing a new influent conduit, screening and grit removal structure, modification of the pumps and piping in the existing sewage pumping station, a new sewage force main, primary settling tanks, primary sludge pumping station, trickling filters, recirculation pumping station, secondary clarifiers, secondary sludge pumping station, chlorinator building, chlorine contact tanks, sludge digestion tanks, digester operating building, garages, administration building and laboratory, elevated water storage tank, railroad spur, sewage, sludge, water and gas piping, fencing, grading, paving, seeding and all other appurtenant work required to complete the construction of the General Contract.

Contract H, the Heating Ventilating and Air Conditioning contract comprises all equipment, labor and materials required for furnishing and installing a gas-oil fired hot water generator with appurtenances, packaged air-conditioning unit electric and gas-fired unit heaters, ventilating units, exhaust fans, gravity ventilator, and all other appurtenances and work required to complete the heating, ventilating and air-conditioning contract in the various buildings and structures of the sewage treatment plant.

Contract P, the Plumbing Contract, comprises all equipment, labor and materials required for furnishing and installing plumbing fixtures, hot water heater, hydrants, a vacuum-compressed air system, soil, waste, vent, gas and water piping and connections to the various fixtures and units, and all other work required to complete the plumbing contract in the various buildings and structures of the sewage treatment plant.

Contract E, the Electrical Contract, comprises all equipment, labor and materials required for constructing underground ducts and manholes for Public Service Electric and Gas Company 4160 volt cables, underground ducts and manhole for plant distribution, and a transformer vault; for furnishing and installing electrical equipment comprising power transformers, control centers, distribution boards and lighting panels, motor controllers and control devices, interior and outdoor lighting systems, a private telephone system, complete conduit and wiring systems, connecting equipment furnished under this contract and the four concurrent contracts, disconnecting, reconnecting and rewiring existing equipment as required, and for all other work required to complete the Electrical Contract.

Contract S, the Structural Steel Contract, comprises all equipment, labor and materials required for furnishing, fabricating and installing all structural steel work and pipe railings in and on the various buildings and structures, and all other work required to complete the Structural Steel Contract.

Drawings and specifications may be obtained at Room 101, City Hall, Trenton, New Jersey upon payment of $100.00 for each set. Checks shall be made payable to the City of Trenton. Upon return of the Contract Documents within four weeks after the date set for the receipt of bids, a bidder will be refunded his deposit, and a non-bidder will be refunded $50.00.

Each bid must be accompanied by (a) a certified check or cashier's check, payable to the order of the City of Trenton, in an amount not less than five percent of the amount of the bid, and (b) by a bid letter from a surety company, licensed to conduct business in the State of New Jersey, engaging to furnish a performance bond of a face value of 100 percent of the contract price, in the event of the award of the contract.

The proposals must not be filed with any City Official but must be delivered by the bidder or his agent to the City Clerk at the meeting above mentioned, when the same shall be called for by the President of the Board of Commissioners.

No bidder may withdraw his bid within 120 days after the opening of bids.

The City of Trenton reserves the right to waive any informality in any bid, to reject any or all bids, or to accept any bid should it deem it to be for its best interests so to do.

Stanley H. Maziarz,
City Clerk

Dated: October 31, 1958

Bids: November 25, 1958

Power Authority of the State of New York

NIAGARA POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY
OF
TRASH RACKS
FOR
LEWISTON POWER PLANT
AND
TUSCARORA POWER PLANT
SPECIFICATIONS NO. PA-N-23016
NIAGARA CONTRACT NO. NP 31

NOTICE TO CONTRACTORS: THE POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. destination, of 26 trash racks for the Lewiston Power Plant and 48 trash racks for the Tuscarora Power Plant in Lewiston, Niagara County, New York, until 10:30 A. M. Eastern Standard Time on the 25th day of November, 1958 at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y., at which time and place proposals will be publicly opened and read aloud.

Bids will be received for welded structural steel trash racks. The work involves the fabrication of approximately 1,202 tons of metalwork. First delivery will be required beginning February 1, 1960.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York upon application and prepayment of a fee of ten dollars ($10.00) per initial set of contract documents, and five dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the maximum price bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: December 2, 1958

Contract PN-300.008

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
BUILDINGS NOS. 178, 179, 180, 181 & 182
AND WHARF
ADDITIONAL MOORING RINGS

Sealed proposals for the furnishing and installation of mooring rings at the site of buildings numbers 178 through 181 at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, December 2, 1958, at which time said proposals will be opened and read in Room 1108.

Contract Documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, November 13, 1958

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: November 20, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 20th day of November 1958, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1; G. L. NICKERSON, District Engineer, 333 Broadway, Albany, N. Y.						
Albany	FASS 58-25	South Bethlehem-Feura Bush Co. Rds. 53, 54 and 102 Proj. S-483(1)	4.14	Asphalt Concrete	$25,000 Plans $5	$457,000
Greene (Rte. 385)	FARC 58-167	Catskill-Athens, S.H. 5367 Proj. F-365(8)	0.67	Asph. Conc.=0.66 Mi's Misc. Work=0.01 Mi. Comp. WF Beam Br., 125	$31,000 Plans $5	386,000
Saratoga (Rte. 9)	FARC 58-166	Clifton Park-Round Lake, S.H. 1795 Proj. F-539(12)	2.31	Asph. Conc.=1.95 Mi. Misc. Work=0.36 Mi.	$30,000 Plans $5	557,000
DISTRICT No. 2, L. KEPCHUM, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Madison (Rte. 12)	FARC 58-161	Hubbardsville-North Brookfield, S.H. 2503 North Brookfield-Waterville, Pt. 1, S.H. 1390 Proj. F-456(9)	3.83	Asphalt Concrete, Type 1A	$43,000 Plans $5	791,000
DISTRICT No. 3, E. E. TOWLSON, District Engineer, 333 E. Washington St., Syracuse, N. Y.						
Cayuga	FASS 58-21	South Butler-Conquest, Pt. 2, Co. Rd. No. 22 and 23 Proj. S-325(2)	3.32	Bit. Double Surf. Treat. Pavt.	$21,000 Plans $5	384,000
Cort. & Tompkins	FASS 58-22	McLean-Cortland Co. Rd. 105 & 130 Proj. S-539	2.24	Bit. Double Surf. Treat. Gravel	$14,000 Plans $5	257,000
Oswego	FASS 58-23	Phillips Corners-Mallory-Little France Co. Rd. 487 Proj. S-54(2)	4.79	Asphalt Concrete	$35,000 Plans $5	634,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Monroe	LOSP 58-4 FAC 58-25	Lake Ontario State Parkway (Dewey Ave.-Rochester City Line) Rochester City: Lake Ontario State Parkway Arterial Highway (Rochester City Line-Lake Ave.) Proj. U-1141(1)	1.68 (1.60 Acc.)	Grad., Drain. & Gravel Found.=1.68 Mi. (Access Rds.=0.92 Mi. Grav. Fdtn. and 0.68 Mi. Asp. Conc.) 2 RR Sepa. Plate Girders 342.1 and 162' 1 Hy Sep. Reinf. Conc. Rig. Frame 109.7' 1 Hy. Sep. Comp. WF Beam 164'	$180,000 Plans $5	2,702,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, 65 Court Street, Buffalo, N. Y.						
Erie (Rte. 78 and 324)	FARC 58-165	Transit Pt. 1, S.H. 88 Sheridan Drive, S. H. 9216 Proj. U-851(9)	1.86 (0.87 Acc.)	9' Cem. Conc. 2 at 24'=1.02 Mi. (Acc. Pavt.=0.87 Mi. Cem. Conc.) Asphalt Conc., Ty. 2A=0.43 Mi. Misc. Work=0.11 Mi. Hy. Sep. Comp. WF Beam, 162.3'	$70,000 Plans $5	1,243,000
Erie	FI NYST 58-1	New York State Thruway-Erie Sect., Sub. 8C, 8D and 8E Niagara Sect. Sub. 1 and Ontario Sect., Sub. 9, 10 and 11 Proj. I-1073(6); I-1071(13)	7.10	6' Chain Link Fence and Misc. Work	$10,000 Plans $5	170,000
Erie	FAC 58-22	City of Buffalo: Broadway Arterial Highway Proj. U-285(4)	0.44	Asphalt Conc., Type 2A=0.38 Mi. Misc. Work=0.06 Mi.	$17,000 Plans $5	313,000
Erie	FASS 58-24	Central Quaker Street, Co. Rd. 498 Proj. S-545(1)	0.86	Bit. Treat. Grav.=0.85 Mi. Misc. Work=0.01 Mi. Comp. WF Beam Bridge=117.3'	$14,000 Plans $5	261,000
Niagara	FAC 58-24	City of Niagara Falls: Hyde Park Boulevard Arterial Highway (Michal Ct. to No. City Line) Proj. U-1128(1)	1.89	Asphalt Concrete=1.53 Mi. Misc. Work=0.07 Mi.	$115,000 Plans, Large Size Only, $50	2,087,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, N. Y.						
St. Lawrence	FASS 58-26	Southville-Holmes Hill Co. Rd. Proj. S-520(1)	6.17	Bit. Surface Treated Gravel	$30,000 Plans $5	537,000
St. Lawrence (Rte. 37)	FATC 58-2	Village of Massena: Center St.-Parker St. Bridge and Interchange, FAS S.H. 57-3. Proj. U-S-467(2)	0.64	Furnishing & Installing Traffic Signals	$2,200 Plans $5	40,000
DISTRICT No. 8, K. G. RAUBE, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Dutchess & Orange (Rtes. 22 & 84)	RC 58-169	Amenia-Wassaic, S.H. 537, Br. No. B-2 Middletown-Montgomery, S.H. 499, Br. No. B-5	....	Cleaning and Painting 2 Bridges	$350 Plans $5	6,000
Orange & Rockland	PIP 58-2	Palisades Interstate Parkway (N.Y. and N.J. State Line to Bear Mt. Br. Circle)	26.13	Roadside Development	$12,000 Plans $5	211,000
Ulster & Sullivan (Rte. 52)	RC 58-164	Woodhenge-Ellenville, Pt. 2B, Pt. 2A and Pt. 1, S.H. 49-4, S.H. 49-6 and S.H. 49-7	10.94	Grad., Trimming Road Section and Misc. Roadside Improvement	$5,000 Plans $5	93,000
Westchester (Rte. 129)	RC 58-163	Croton-Croton Dam-Croton Bridge, Pt. 2, S.H. 1886	3.66	Beam Type Guide Railing	$1,100 Plans $5	20,000
DISTRICT No. 10, M. E. GOUL, District Engineer, 325 W. Main Street, Babylon, L.I., N. Y.						
Bronx	FI TNE58-3 FI CBE58-5	Interstate Route Connection 513 Cont. 2 (Cross Bronx Expressway and Throgs Neck Expressway) Proj. I-1113(7)	2.73	Grading and Drainage Bridge Substructure	$470,000 Plans $5	8,430,000
Nassau	MSP 58-1	Meadowbrook State Parkway	0.13	Miscellaneous Drainage Work	$2,000 Plans $5	37,000
Nassau	FAC 58-23 FARC 58-168	Glen Cove Arterial Cont. 1 (Cedar Swamp Rd. to L.I.R.R.) Massapequa-Glen Cove, S.H. 9017. Proj. U-UG-1102(3)	0.74 (0.25 Acc.)	9' Cem. Conc. Pavt. 2 at 23' wide=0.68 Mi. Misc. Work=0.06 Mi. (Access=0.20 Mi. Cem. Conc. and 0.05 Mi. Asp. Conc.) 1 Hy. Sep. Comp. I-Beam 76.3' 1 RR Sep. Plate Girder, 146'	$94,000 Plans $5	1,899,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal. Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: December 2, 1958

City of Linden, New Jersey

NOTICE TO BIDDERS

Sealed proposals for Construction of Storm Drain and Appurtenances in connection with Contract 2 of Storm Drainage Relief Project—Eighth Ward will be received by the Common Council of the City of Linden, New Jersey, at a meeting to be held in the Council Chamber at the City Hall 8:30 P. M. on December 2, 1958, and then publicly opened and read. No proposal will be accepted after said hour.

The work will include the construction of about 1248 lineal feet of a 6 ft. by 15 ft., reinforced concrete drain (or dual 77-inch by 121-inch oval reinforced concrete drain as an alternate) and appurtenant structures.

Information for Bidders, Proposal Forms, Specimen Contract, Plans, Specifications and other pertinent Contract Documents may be examined at the office of the City Engineer, City Hall, Linden, N. J., and at the office of Alexander Potter Associates, Consulting Engineers, 50 Church Street, New York, between the hours of 10 A.M. and 4 P.M., daily except Saturdays and holidays and there obtained upon making a deposit of Forty ($40.00) dollars. Full refund will be made to actual bidders for return of one set, in good condition within (15) days. Half of this deposit will be refunded to non-bidders. Extra copies of Specifications may be obtained at a cost of ten ($10.00) dollars each and extra copies of the drawings at a cost of One (1) dollar each which sums will not be refunded.

BIDS AND BID SECURITY: All bids must be made upon standard proposal forms contained in the bidding documents and must be enclosed in sealed envelopes bearing the name and address of the bidder and a designation of the proposed work on the outside of such envelope addressed to the Council of the City of Linden. Each bid must be accompanied by a certificate of a responsible surety company executed by the bidder and such surety company guaranteeing that the bidder will execute the contract if it is awarded to such bidder and that said surety company will provide the performance bond recited in R.S. 2A:44-147 in the full amount of the contract price.

No bid may be withdrawn for any reason whatsoever after it has been opened and read at the time and place above designated during the period of forty-five (45) days following the public opening and reading of such bid.

In the event the successful bidder shall fail to enter into a contract with the City of Linden or fail to file the required performance bond within ten (10) days after the giving of notice on behalf of the City of Linden to such bidder that the award has been made to said bidder, the City of Linden may award the contract to the next lowest responsible bidder or in its judgment may proceed to re-advertise for new bids and the aforesaid successful bidder and surety company shall be responsible to the City of Linden for all of its expenses, losses and damages by reason of such failure on the part of the bidder and surety, or either of them. Extension of time to enter into the contract and failure to do so after such extension of time shall not in any way effect the rights of the City of Linden against the bidder or surety company.

The Council reserves the right to reject any and all bids as may be deemed to be in the best interest of the City of Linden. The Contractor shall enter into the form of contract contained in the bidding documents, which may be inspected in the office of the City Engineer and the Consulting Engineer, and the same shall include and shall be regarded as including, whether the same is specifically set forth or not, the provisions of R.S.34:10-1 (Chapter 230 P.L.1932) and all state laws and labor regulations relating to municipal contracts.

BY ORDER OF THE MAYOR AND COMMON COUNCIL OF THE CITY OF LINDEN, NEW JERSEY
Francis H. Dann, City Clerk

Dated: October 30, 1958

Bids: November 20, 1958

Contract M 58-16

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Canal Law and Highway Law, sealed proposals will be received, until 10:30 A.M., E.S.T. on November 20, 1958 by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, the Governor Alfred E. Smith State Office Building, Albany, New York for:

Contract M 58-16 for Repairs to Winton Rd. Bridge (E-142) over the Barge Canal in Monroe County, New York.
Engineer's Estimate for M 58-16 is $14,-400.00.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, New York.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract M 58-16 may be examined and obtained at the office of Mr. B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York.

The deposit for Plans and Proposal Forms for Contract M 58-16 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Proposals for M 58-16 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" in the amount of $800.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Canal Law and the Highway Law as set forth in "Instructions to Bidders" in the contract specifications. The right is reserved to reject any and all bids.

JOHN W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

Prequalification Date: November 24, 1958

Board of Education
Bureau of Construction

Notice Re: Prequalification Forms For Contractors
APPROVED AS TO FORM
Acting Corp. Counsel

NOTICE IS HEREBY GIVEN THAT The Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y. will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:

general construction, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures.
The Bronx
New Public School 5, East 149th Street between Jackson and Concord Avenues.
Brooklyn
Modernization and Conversion of Junior High School 49, Graham Avenue, and Scholes Street.
Modernization and Addition to Public School 213, Linden Boulevard and New Jersey Avenue.

Prequalification application forms will have to be secured from and must be submitted to the Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.

Bids when advertised, will be received from prequalified bidders only.

Time for submitting prequalification applications by contractors will expire on Monday, November 24, 1958.

WILLIAM H. CORREALE
Superintendent of School Buildings,
Design and Construction
Dated: November 3, 1958.

Bids: December 16, 1958

Contract GWB-190.004

THE PORT OF NEW YORK AUTHORITY
GEORGE WASHINGTON BRIDGE
LOWER LEVEL EXPANSION
SECTION NO. 2

Pursuant to the provisions of the Highway Law and special provisions for projects financed with Federal Aid Funds, sealed proposals for the construction of Section No. 2 of the approach roadway system in New York for the lower level expansion of the George Washington Bridge will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, December 16, 1958, at which time said proposals will be opened and read in Room 1105.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $50.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $50.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, November 13, 1958

Bids: December 9, December 10, 1958

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. on Wednesday, December 10, 1958

For Throgs Neck Bridge Contract No. TN-11, Queens Interchange. The bid must be accompanied by a deposit in the amount of $80,000.00.

Plans, specifications and contract documents may be purchased at the office of the Authority for $45.00, which will not be refunded.

Until 11 A.M. on Tuesday, December 9, 1958

For Throgs Neck Bridge Contract No. TN-9, Electrical Work Suspended Structure and Approaches. The bid must be accompanied by a deposit in the amount of $60,-000.00.

Plans, specifications and contract documents may be purchased at the office of the Authority for $25.00, which will not be refunded.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5119) will be received at Lewiston, California until 2 p.m. Pacific Standard Time, December 9, 1958, for furnishing labor and materials for earthwork, structures and surfacing, relocation of Trinity County Roads, Stoney Creek to Ridgeville, California—Central Valley Project. Location near Redding, California in Trinity County. Principal items are 750,-000 cu. yds. excavation; 700 cu. yds. concrete in bridge; 80,000 tons crushed rock base; and other work. Completion time 540 days. For particulars, address Bureau of Reclamation, P. O. Box 247, Lewiston, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

CONTRACTORS
WATCH
THIS SECTION
for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

Bids: November 20, 1958.

New York State Road

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time on the 20th day of November 1958, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.		
Orange (Rte. 17K)	FARC 58-144	Cochecton Turnpike, Pt. 1 S. H. 113 Proj. U-483(5)

Miles	Type	Deposit	Estimated Cost of Work
0.74	9" Cem. Conc. Pavt. 2 at 24' Wide=0.66 Mi. Misc. Work=0.08 Mi. R.C. Box Br. 32.1'	$30,000 Plans $5	$560,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

READ THE OFFICIAL PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

EMPLOYMENT OPPORTUNITIES

NATIONAL COVERAGE

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

NOVEMBER 27th ISSUE CLOSES NOVEMBER 17th:

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency commission.

Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Highway Engineers—Highway Engineers with a minimum of 3 years experience. Excellent opportunity with established consulting engineering firm in Middle West. P-7909, Engineering News-Record.

Assist. Prof.—To teach undergrad. courses in structures and mechanics. Salary open. Civil Eng., Univ. of No. Dak., Grand Forks.

Civil Engineer—Recent graduate, structures option, needed by prestressed concrete firm. Write Prescon Corporation, Box 4186, Corpus Christi, Texas.

Experienced Engineer to supervise subdivision construction and development. Including pavement, drainage, water, and sewage facilities. Central Florida location with consulting engineering firm. P-9135, Engineering News-Record.

Have opening for several recent Civil Engineer Graduates with military obligations completed who desire to learn the construction business. Must be ambitious, aggressive, dependable, use no intoxicants, preferably single, willing to start in the field on industrial buildings and heavy construction, and willing to move. We operate throughout Kansas and adjacent states. Our organization offers excellent opportunity for advancement. We pay top wages. Martin K. Eby Construction Co., Inc., P. O. Box 1679, Wichita, Kansas.

Estimator-General Superintendent for mid-western utility contractor. At least ten years experience with some engineering background. Send complete resume to P-9206, Engineering News-Record.

City Engineer/Director of Public Works, Win-ter Haven, Florida (Pop. 13,000) Municipal experience desired. Send Qualification resume to City Manager, City Hall, Winter Haven, Florida.

POSITIONS VACANT

Civil Engineer—Age 25 to 40. Must be graduate engineer—Registered or capable of being such—Minimum three years construction experience. Work on small irrigation structures and earth dams. Send resume including picture and beginning salary requirement to: Chief of Water Development, Wyoming Natural Resource Board, 215 Supreme Court Building, Cheyenne, Wyoming.

Supervisor for Shop and Yard wanted by Central Kentucky Contractor. Salary commensurate with experience. Reply in own handwriting giving qualifications and experience. Reply to P-9204, Engineering News-Record.

Electronic Computer Application Engineer Wanted. Midwestern consulting Engineering firm needs graduate engineer experienced in electronic computer application to engineering problems. Reply in detail to P-9211, Engineering News-Record.

Estimator wanted by General Building Con-tractor. Prefer graduate Civil or Architectural Engineer with at least 5 years of estimating experience on General Building Construction. Capable of completing estimates from preliminary plans. Excellent opportunity. Location—Central Pa. P-9220, Engineering News-Record.

Sales Engineer—Estimator for structural steel and miscellaneous iron fabricator. Degree in architectural or civil engineering desirable. State experience, education, age, salary requirements and enclose snapshot with first letter to Southern Iron Works, Inc., P. O. Box 430, Alexandria, Va.

Wanted—Experienced Engineers to prepare plans for sanitary sewers and water systems, sewage and water treatment plants. Unusual opportunities for professional advancement and independent practice. State age, experience, education, when can report, salary required. P-9256, Engineering News-Record.

Engineer for Structural Design work in Mpls. Perm. position, good opportunity. Salary $6600 to $7800 depending on experience. Write Bridge Engineer Soo Line Railroad, Mpls., 40, Minn. Box 1109.

POSITIONS VACANT

Asst. Supt. Fully experienced in supervising heavy earth and rock excavations. Hwy job. Build to completion. Opportunity unlimited, multi-million dollar project in Southern Ohio. Salary open. P-9249, Engineering News-Record.

Civil Engineer—experience and ability in design of sewers—sewerage treatment plant. State educational background, experience and salary desired. Write—Lewis E. Kohl, Inc., 16 State Street, Rochester, New York.

• POSITIONS WANTED

Supt. Const., 20 yrs institutional, industrial, Commercial. Engineer. Anywhere. PW-9138, Engineering News-Record.

Civil Engineer, five year C.E. Degree, three years experience in structural design and teaching. Also talented in human relations and administration. Desires foreign assignment, but will consider challenging U.S. position. PW-9139, Engineering News-Record.

Equipment Manager with experience and abil-ity to handle large foreign job. Available early 1959. PW-9173, Engineering News-Record.

Office Manager-Accountant Main or Field office domestic or foreign. Heavy Const. Taxes, payroll, costs, timekeeping, Purchasing, Insurance, Joint Venture, Personnel. PW-9178, Engineering News-Record.

Foreign Service experience. All aspects of negotiation, organization, labor training and direct supervision for roads, utilities, housing, general construction. Excellent record dealing with foreign philosophy under adverse conditions. Mature, adaptable, forceful. PW-9188, Engineering News-Record.

Former Contractor and heavy construction equipment superintendent, 20 years experience in Europe, South America and domestic desires superintendent's position on earthmoving project in Central or S.A. Now employed in S.A. PW-8860, Engineering News-Record.

(Continued on page 127)

ENGINEERING DESIGN PERSONNEL

Highway & Bridge Designers, Highway & Bridge Draftsmen

Openings in Pennsylvania, Ohio, Maryland & West Virginia

Career opportunities for individuals interested in professional recognition ample opportunity for advancement based on merit, plus employee retirement plan, group life insurance, hospitalization, paid vacation and holidays.

EXPERIENCE REQUIRED

Mail Resume To F. W. AHERN, Personnel Director

MICHAEL BAKER, JR., INC. *Consulting Engineers*

Baker Building Phone: SPruce 4-3010 Rochester, Penna.

GRADUATE CIVIL ENGINEER

We are looking for a young, experienced, college graduate, with a degree in civil engineering, for a position in our El Paso, Texas Office. This opening is for a field engineer. It is an excellent opportunity for a young man to obtain a desirable position with a reliable firm doing all types of construction work.

ROBERT E. McKEE
GENERAL CONTRACTOR, INC.
P. O. Box 562 El Paso, Texas

ENGINEERS

PERMANENT OPENINGS FOR QUALIFIED MEN EXPERIENCED IN THE DESIGN OR SPECIFICATIONS FOR

AIRPORTS
BRIDGES
BUILDINGS
HIGHWAYS
RAILROADS

PREFER GRADUATE REGISTERED ENGINEERS WHO SEEK LONG RANGE EMPLOYMENT WITH AMPLE OPPORTUNITY FOR PROFESSIONAL DEVELOPMENT AND ADVANCEMENT IN A STEADILY EXPANDING AND GROWING ORGANIZATION.

Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income plus life and disability insurance. Blue Cross. Moving allowance.

Work will be in the general offices in St. Louis. Interviews can be arranged in Washington, D. C., and San Francisco also.

Please write fully, including salary data, to

SVERDRUP & PARCEL, Inc.
ENGINEERS—ARCHITECTS
915 Olive St. Louis 1, Mo.

ASSISTANT CHIEF ENGINEERS

(Design)

An internationally known consulting engineering firm has openings for two highly qualified assistant chief engineers (design) to administer and direct engineering activities of two branch offices in East and South with staffs of 30 to 50 civil, highway, structural, mechanical and electrical engineers, architects and surveyors engaged primarily in planning, design and supervision of construction on heavy construction projects under general supervision of home office. Positions involve direct liaison with clients.

Applicants must be registered graduate engineers with at least 15 years diversified experience in design, including at least 5 years in supervision of comparable integrated organizations.

Unsurpassed company paid hospitalization, life insurance and retirement benefits. 40 hour week. New air conditioned offices, liberal salary. Permanent positions with excellent opportunities for advancement. Send complete resume of education and experience with salary requirements to:

PALMER AND BAKER
ENGINEERS, INC.
P. O. BOX 346 MOBILE, ALA.

MECHANICAL ENGINEER

Graduation from a four year college or university with major course work in mechanical engineering - possession of a license as a mechanical engineer as issued by the State of Connecticut or any other state in which the standards for registration are not lower than those of Connecticut. Salary $6136-$7436 per annum. Complete details by writing to Director of Personnel, Municipal Building, Hartford, Conn.

CHIEF ESTIMATOR

Construction firm, located in Virginia, performing industrial, commercial and engineering type construction is interested in employing estimator whose experience and background will qualify him for immediate or eventual position as estimating manager. Permanent employment if work proves satisfactory. Civil Engineer graduate preferred.

P-9255, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

SOILS ENGINEER

Experienced Soils Engineer needed for Highway and Bridge construction project in South Vietnam. Position demands initiative, judgment, and skill in handling human relations in addition to professional competence.

Graduate degree in soils is mandatory. Experience desirable in soil testing, stability analyses, pavement design, and bridge foundation investigations. Some knowledge of materials testing helpful. Dependents may accompany.

CAPITOL ENGINEERING CORPORATION
Consulting Engineers
Dillsburg, Pennsylvania

McKEE's Continued Expansion

offers excellent opportunities for

ENGINEERS DESIGNERS

who have supervisory potential.

Must have at least ten years responsible design and engineering experience in any of the following or allied fields:

STEEL PLANTS
BLAST FURNACES
OPEN HEARTHS
SINTERING PLANTS

Send resume and photo to:
G. VICTOR HOPKINS

Arthur G. McKee & Co.
2300 Chester Ave. Cleveland 1, Ohio

CLASSIFIED ADVERTISER'S INDEX

Albert Pipe Supply Company 129
Ambursen Dam Company, Inc. 129
Anderson Equipment Company .127-128-129
Associated Pipe & Fitting Company .. 129
Baker, Jr. Inc., Michael 126
Buff 128
Capitol Engineering Corp. 126
Commaco, Inc. 129
Cranes Inc. 128
Davidson Pipe Company, Inc. 129
Deatherage & Son, Geo. E. 127
Drachman Steel Corp., Hy. 129
Eveready Supply Company 127
Forsythe Equipment Company 127
General Sand & Stone Corporation ... 128
Gillis & Company 128
Greenpoint Iron & Pipe Company 129
Havre De Grace Shipyard, Inc. 129
Hoppe, C. B. 129
Judge Transportation Equipment Co. . 128
Kingston Construction Co., Inc. 127
MacNeal Inc., Donald B. 127
McKee & Co., Arthur G. 126
McKee, Robert E. 126
Meriweather Inc., George M. 128
Mississippi Valley Equipment Company 129
National Blue Print Company 128
Neu Corporation, Hugo. 128
Palmer & Baker Engineers, Inc. 126
Seaboard Equipment Company, Inc. ... 128
Service Supply Corp. 127
Sherman Crane Service, Inc. Roger .. 129
Sverdrup & Parcel, Inc. 126
Trifero, D. J. 128
Victory Construction Company 128
Warren-Knight Company 128
Weil Company, J. H. 128
Weiss Company, B. M. 129
Western Services Corp. 129
Whisler Equipment Company 128
Wilson Engineering Corporation 127

• POSITIONS WANTED
(Continued from page 125)

Field Construction Engineer—41, German, 2 years designing and drafting, 9 years field reinforced concrete, river ports, irrigation, bridges in South America. Fluent Portuguese, Spanish, French and German. Foreign or Domestic. PW-9222, Engineering News-Record.

15 years experience in dock building, pile driving, heavy construction, supervision, estimating work, procurement purchasing. PW-9183, Engineering News-Record.

Rock Products Engineer—18 years diversified experience with 10 years in concrete products, building materials, expanded shale aggregates. Experienced in development, manufacturing, marketing. Graduate engineer with good profit sense, broad scope, positive attitude. Wants responsible position progressive company, northeastern U. S. PW-9169, Engineering News-Record.

Project Manager—Construction Engineer B.S.C.E., Reg. Engr., age 50, perfect health, 28 yrs. experience in design and construction of sanitary engineering projects, industrial, commercial and housing developments, municipal engineering, tunnels and highways. Fully capable to plan, organize and administer engineering and construction activities, either in field or office. Available approx. Jan. 15, 1959. Salary open. Prefer midwestern states bordering the great lakes or central eastern states. Job responsibility and challenge more important than location. Full resume on request. PW-9234, Engineering News-Record.

Liaison engr., 30, grad. CE. Employed in coordinating projects between owner, design and field. Desires similar position in field engineering leading to project and engineering management. PW-9235, Engineering News-Record.

Sewage Treatment Plant Operator or Resident Engineer experienced in supervising the building and operating of sewage treatment plants. Age 45, location U. S. Desire position as project engineer on building a plant or permanent position operating plant. PW-9238, Engineering News-Record.

Management Level experience, both U. S. and foreign, in construction and related activities—promotion, organization, financing, negotiation, project anupervision and top level representation in Washington, D. C. PW-9257, Engineering News-Record.

Engineer, 27, eager for responsible construction position Alaska, preferably vicinity Fairbanks, commencing immediately or Spring. Supervisory experience, Hydro-elec, highway, structural background. D. J. Williams, Coal Harbour, B. C., Canada.

Commercial pilot, 24, presently employed as office engineer on multi-million dollar project. Experience in survey, layout, bldg., heavy construction and supervision. Desire pilot or co-pilot position utilizing eng. experience. PW-9250, Engineering News-Record.

Contractor's Engineer—graduate C. E. licensed. Heavy Construction, Missile Projects, Buildings. Wide experience in Estimating, Purchasing, Cost Keeping, Field Supervision and Project Management. Thorough knowledge and experience in the successful preparation and processing of construction claims on government and State work. Presently employed by contractor in N. Y. and Phila. areas. Available within two weeks notice. PW-9251, Engineering News-Record.

Civil Engineer, MSCE-Hyd., registered, 20 years varied design and field experience in USA, Europe and South America, fluent Spanish, seeks foreign or domestic assignment. P. O. Box 1039, New Orleans 8, La.

Civil Engineer, age 33, married, no children, experienced in design and field. No citizen. PW-9267, Engineering News-Record.

Graduate Civil Engineer available, 6 years design and construction experience. PW-9266, Engineering News-Record.

Civil Engineer, MSCE, 32, single, presently registered in two states. Desires position as City or County Engineer in growing area. No municipal experience. 9 years experience in related engineering work with 7½ years in responsible positions. Salary and location open. PW-9265, Engineering News-Record.

Construction or Engineering Executive, B.S.C.E., B. PH., M.A.S.C.E., 49, 26 years well rounded world wide engineering and heavy construction experience. Desires responsible position construction or engineering firm, state-wide or overseas. Salary plus profit participation preferred. PW-9264, Engineering News-Record.

Resident Engineer Airfields, twenty years experience all phases. Telephone Endicott, Two Nine Two Hundred, Extension Eight Zero Nine, New York City.

SEARCHLIGHT SECTION
CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vert. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

REDUCING RENTAL STOCK

TRUCK CRANES

2—20 TON CAPACITY 35' BOOM HENDRICKSON 3 AXLE TRUCKS, PURCHASED BY US NEW FROM MFG. $13,500.00 EACH, F.O.B. CHICAGO.

Donald B. MacNeal, Inc.

121st Loomis St. — Chicago 43, Ill.
Telephone: PUllman 5-5040

FORSYTHE EQUIPMENT CO., INC.

MANITOWOC SPEEDCRANES

RENTALS

Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs
Special rates on long rentals

Exeter 2-6125 — 37-11 Vernon Blvd.
Long Island City 1, New York

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.
GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
Sarasota, Florida

McKIERNAN-TERRY DOUBLE-ACTING PILE EXTRACTORS

The E2, for average light extracting jobs, withstands up to 50 tons of force exerted by the pulling rig. The E4, for longer, heavier and more stubborn extracting jobs, withstands up to 100 tons.

SERVICE SUPPLY CORPORATION
2002 Erie Ave. — Phila. 32, Pa.
BAldwin 9-1980

FOR SALE: 3-PLACE HELICOPTER

Hiller 12.C, mfg. 1958 total time 285 hrs.
Narco 27-channel radio, L. f. and broadcast.
Big Heater.
Ideal contractor's tool, get to inaccessible areas can land anyplace.
Cruise at 75 mph.
Commercial version of Army's Rugged Raven $31,900
FS-9254, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
WILSON *Engineering Corp*

FOR SALE

10 Ton SHEPARD NILES OVERHEAD TRAVELING ELEC. CRANE 46'3¼" span; 1 hook; cable dia. 9/16", length 230' GE hoist motor 30HP bridge 17 HP trolley 5 HP; Used very little. Guaranteed good working order $2,975 fob cars or trucks

AMERICAN HOIST & DERRICK GANTRY CRANE: 115' boom at 15 tons new '45; 100 KW G3C diesel eng; 75 HP winch motor, never used. Can be seen running.

EVEREADY
BOX 638, BRIDGEPORT, CONN.
EDison 4-9471

• CONTRACT WORK WANTED

Experienced Reinforcing Steel Detailers desire work on sub-contract basis. Union Steel Engineering Co., 900 E. Front St., Cincinnati, Ohio. Tel. MA-1-4000.

Design, specifications, contract drawings, for all types of simple, continuous, and long span bridges. Tight time schedules met. Professional Engineers. Bridgeway Associates, P. O. Box 1711 Church St. Sta., N.Y.C.

Your Inquiries to Advertisers Will Have Special Value . . .

—for you—the advertiser—and the publisher, if you mention this publication. Advertisers value highly this evidence of the publication you read. Satisfied advertisers enable the publishers to secure more advertisers and—more advertisers mean more information on more products or better service—more value—to YOU.

FOR SALE—LORAIN Model 95 Crane, Rigged for Clamshell, Cat. D-17000 Diesel, 70' Boom, No Bucket.

ANDERSON EQUIPMENT COMPANY
P. O. Box 427, Bridgeville, Pa.
(Pittsburgh area)
Phone: LEhigh 1-6020 or CAsal 1-5300

NEW TRUCK CRANES FOR RENT

25 and 35 Ton Bay City Truck Cranes—Draglines with long booms and jibs.

KINGSTON CONTRACTING CO.
WEST POINT, PA.

FOR SALE
LOCOMOTIVES

Baldwin - Westinghouse standard gauge 140 Ton 750 H.P. diesel electric LOCOMOTIVES.

3—1955—G.E. 80 ton—42" gauge can be converted to 36" or 4' 8½ standard gauge.

ALSO

25—44—65 ton LOCOMOTIVES.

Other Railway & Construction Equipment.

JUDGE TRANSPORTATION CONSTRUCTION INC.
7010 EMPIRE STATE BLDG.
NEW YORK 1, N. Y.

FOR SALE

(3) Complete Ready-Mix Concrete Heating Plants as follows:
(1) 100 H.P. Cleaver-Brooks Steam Generator
(1) O&S Powermaster, 50 H.P. Steam Generator.
(1) Cyiatherm, 90 H.P. Steam Generator
All of the above are complete with automatic controls and hot water tanks equipped with Patterson Kelly coils. Any one of the above units will supply enough steam and hot water to produce 150 yards of heated concrete per hour.

(2) 150 ton—6 compartment Heltzel Batching Bins, 4 compartments for aggregates and 2 separate compartments for cement, together with 500 barrels cement silo, undertrack screw, cement elevator and separate scales.

(1) 100 ton—3 compartment Batching Bin with 2 yard weigh box

(2) Model DC-100-64 Tandem Axle Autocar Trucks with 6½ yard Smith Mixers.

(3) Model C-90-64 Tandem Axle Autocar Trucks with 5½ yard Smith Mixers.

(1) Model F8-Ford with 3½ yard Smith Mixer.

General Sand and Stone Corporation
7... ... xwood ...vd. Hartford, Conn.
Telephone JAckson 7-9291

Need A "Lift"?
CRANES, INC.
RENTALS

Manitowoc 3900's — **Crawlers** 3500's

Latest Models
Long Booms and Jibs

TRUCK CRANES

Link Belt and Bay City. Cap. to 35 Tons. Booms to 150 ft. Hoists-Welders-Generators

Maspeth 78, N. Y. ST 4-1776

WHIRLEY CRANE
FOR SALE

American Model 685, electric, with traveling gantry, 75' boom, 150 HP, excellent, immediate shipment.

GEORGE M. MERIWETHER, INC.
1712 7th Ave. No. FA 4-2486 Birmingham 4, Ala.

FOR SALE OR RENT

30 TON BROWNING DIESEL LOCO. CRANE
80 TON GE DIESEL ELEC. LOCO. NEW 1950
65 TON WHITCOMB DIESEL ELEC. LOCO.
44 TON GEN. ELEC. DIESEL ELEC. LOCO.
25 TON WHITCOMB DIESEL ELEC. LOCO. 1948
50 TON AMER. GUY DERRICK, 115' MAST, 100' BM.
90 HP LIDGERWOOD 2D DIESEL HOIST W/-SWINGER
2½ YD. LINK-BELT K-595 DIESEL CRANE, 120' BM.
110 HP CLAYTON PORT. STEAM GENERATOR

Also Other Constr. & Ry. Equip.

WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

FOR SALE—DRAGLINE, KOEHRING Model 1005, Buda Diesel, 80' Boom, 3½ Yd. Bucket.
Good Running Condition

ANDERSON EQUIPMENT COMPANY
P. O. Box 427, Bridgeville, Pa.
(Pittsburgh area)
Phones: LEhigh 1-8020 or CAnal 1-5300

SALE OR RENT

Northwest 80D Dragline & Shovel
Northwest Mod. 71 2yd. Crane & Dragline
Lorain 82 2yd. Crane & Dragline
LeRoy Tractair Mod. 210 A.T.
Phone • Wire • Write

D. J. TRIFERO
14 Cedar Street Glassboro, N. J.
Phone TUlip 1-0634

Steel, flat top
CONSTRUCTION BARGE

30 feet by 100 feet by 6 feet in depth—divided into 6 compartments. Built in 1956. Top Condition—for immediate disposal.

Contact VICTORY CONSTRUCTION COMPANY
2333 Brentwood Blvd., St. Louis 17, Missouri

RAILS-TIES
TRACK ACCESSORIES
NEW and RELAYING

SURVEYING INSTRUMENTS
USED • REBUILT • SALE • RENT • REPAIRING

TRANSIT & LEVEL REPAIR SERVICE

Highly skilled service on all makes in our own modern shop

USED TRANSITS SALE OR RENT
Fully reconditioned and guaranteed.

Distributor GURLEY INSTRUMENTS

J.H.Weil Co.
ESTABLISHED 1890
1336 Cherry St. • Philadelphia 7, Pa.

TRANSITS & LEVELS
Various Makes
NEW & REBUILT

Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

INSTRUMENTS RENTED

Midwest Representatives: W. & L. E. Gurley, Distributors—Fietenico Salmoiraghi

NATIONAL BLUE PRINT CO.
Established 1912
210 S. Canal St. Chicago 6, Ill.

TRANSITS AND LEVELS

New or Rebuilt Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade.

A complete line of Engineering Instruments and equipment for field or office. Write for catalog NLR 811.

WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

USED RAILROAD TIES
IN CARLOAD LOTS ONLY

First Selection "Relay" Creosoted Oak and Hardwood 6" x 8" x 8'
Thoroughly fit for re-use
Over 30,000 in Arkansas and Kansas
Over 6,000 Pine in Chicago
Three more big lots developing in Penn. and Md.

GILLIS & CO.
Box 91, Louisville 7, Ky.
Tel. TW 5-9484—*Wire* FLX

#1 RELAYERS FOR SALE

$80 Net. Ton. FOB Boston
Minimum Carload Lots
1440 tons—100# — 435 tons 95#
Track Accessories Available

HUGO NEU CORPORATION
45 Nassau St. New York City

RE-BUILT REPAIRS RENT REAL EXPERTS

BUFF — ALL MAKES

40 Day St., New York WOrth 2-3717

CRANES FOR RENT

CRAWLERS — Capacities to 60 tons, Booms to 180 ft.
TRUCK CRANES — Capacities to 35 tons, Booms to 130 ft.

P and H. Lima and Manitowoc.
Top-Condition erection cranes

ROGER SHERMAN
CRANE SERVICE, INC.
East Hartford, Connecticut JAckson 8-4186

STEEL BARGES and WILEY WHIRLEY FLOATING CRANES

Capacity to 100 tons
Continuous Production
Prompt Delivery
Crane Shown 50 Tons, 65 Ft. Radius With 24' Turntable, 125 Ft. Boom
HAVRE DE GRACE SHIPYARD INC.
Havre De Grace, Maryland

LOW COST INSTALLATION AND OPERATION
CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM or DIESEL
CAPACITY 5 to 20 TONS
SELL, RENT or BUY
FOR DAMS, BRIDGES, BREAKWATERS, FILTRATION AND SEWERAGE PLANTS
FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY, LABOR REDUCTION
AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

FOR SALE—TWO (2) NORTHWEST Model 80D Shovels. Murphy Diesel, 2½ Yd. Dipper, 12,000 Series. Machines priced to sell.
ANDERSON EQUIPMENT COMPANY
P. O. Box 427, Bridgeville, Pa.
(Pittsburgh area)
Phone: LEhigh 1-6020 or CAnal 1-5300

SALE OR RENT
1—25 Ton Bay City Truck Crane
1—30 Ton Lorain Truck Crane
1—25 Ton Ohio Diesel Locomotive Crane
1—30 Ton Browning Diesel Locomotive Crane
1—D17,000 Caterpillar Power Unit
S. M. WEISS COMPANY
Girard Trust Bldg. Philadelphia 2, Pa.

MODEL 4500 MANITOWOC SPEEDCRANE
Serial #4500, complete with 140' Boom (45' bottom steel, 38' top aluminum, 37' center aluminum), Caterpillar D398 Diesel engine, air controls, full revolving fairlead, 25'9" crawlers, 60" crawler treads, 5 KW Koehler light plant complete with lights, one 20' aluminum boom insert, air windshield wiper; including bucket. Located in Florida.
Owner: C. B. HOPPE, Box 590, Palm Beach, Fla.
Phone: Temple 2-2479

PILING
SURPLUS NEW and USED — For Sale, Wanted or Rent

FOR SALE—DRAGLINE, LIMA Model 1201, Cummins Diesel, 19' Crawlers, 44" Pads, 75' Boom, 3½ Yd. Page Bucket. Good Condition. Reasonable.
ANDERSON EQUIPMENT COMPANY
P.O. Box 427, Bridgeville, Pa.
(Pittsburgh area)
Phone: LEhigh 1-6020 or CAnal 1-5300

We do a Nation-wide business in
STEEL SHEET PILING
IMMEDIATE SHIPMENT
813 pcs. 25 to 30 ft. Both. SP-6a—New York
100 pcs. 62 ft. Both. ZP-32—Connecticut
103 pcs. 60 ft. MZ-22—Tennessee
150 pcs. 60 ft. SP-4—W. Virginia
290 pcs. 60 to 70 ft. M-116 & M-115—Tennessee
370 pcs. 60 to 70 ft. M-116 & M-110—Indiana
150 pcs. 34-30 ft. M-116—Michigan
81 pcs. 25 ft. M-115—Mississippi
220 pcs. 15 ft. M-115—Missouri
Other lengths and sections at various locations. Storage yards at CHICAGO, BUFFALO & MEMPHIS.
Also 10" x 42# and 12" x 53# BP 60' in stock.
PILE DRIVING EQUIPMENT
VULCAN AND McKIERNAN-TERRY PILE HAMMERS & EXTRACTORS
All Sizes—For Rent & Sale—Immediate Shipment
MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

HY DRACHMAN STEEL CORP.
STRUCTURAL STEEL
The Contractors Steel Supply House
52-25 2nd St., Long Island City, N. Y.
RAvenswood 9-1262
STEEL IS OUR BUSINESS

PIPE
Surplus New & Used
FOR SALE

ALBERT PIPE SUPPLY CO. INC.
PIPE • CULVERTS • VALVES & FITTINGS • CEMENT PIPE • ALUMINUM PIPE
103 VARICK AVE., BROOKLYN, N. Y. • HY 7-4900

ASSOCIATED PIPE & FITTING CO.
PILING PIPE — SHELLS — MANDREL FITTINGS
K & M ASBESTOS CEMENT PIPE
CULVERTS — CIRCLE ARCH — SECTIONAL

When you need
PILING . . . fast
use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

STEEL SHEET PILING
LARSSEN and ROMBAS Sections
STOCKS AVAILABLE IN:
- Linden, New Jersey
- Ft. Lauderdale, Florida
- Houston, Texas

WESTERN SERVICES CORPORATION
601 E. Linden Ave. Linden, N. J.
MArket 4-4000 HUnter 6-4000
In Florida Call: Port Everglades Steel Co. Ft. Lauderdale—JA. 4-8545
In Houston Call: G. Oliver—CA. 4-7254

EST. 1904
DAVIDSON
PIPE SUPPLY CO. INC.
Seamless and Welded Steel Pipe
Fittings, Valves
Pipe Fabricating
Call GRdney 9-4300
50th St. & 2nd Ave., B'klyn 32, N. Y.

STEEL SHEET PILING
AVAILABLE FOR PROMPT SHIPMENT

Pcs.	Section	Length	Location
200	MP-116	50 to 60'	Kansas City
200	MP-115	50 to 60'	Kansas City
150	MP-112	50 to 60'	Chicago
450	MP-116	35 to 40'	Chicago
175	MP-115	50 to 60'	Chicago
100	MP-112	19 to 20'	Nebraska
1300	SP-6a	15 to 47'	New York

CONMACO, INC.
PHONE DRexel 1-3939
804 KANSAS AVE., KANSAS CITY, KANSAS

H & STEEL SHEET PILING
3700 PCS. BETH. SPS, A&T 50' 55' & 40' & 45'
430 PCS. MP112—12' 25' 40' & 60'
417 PCS. BETH—AP3 25 & 30, 40 & 60 FT.
700 PCS. BETH.—SP3—31' 10' 40' 50' 60'
1200 PCS. ZP26-ZP32—20' 30' 50-60' & 65'
1200 PCS. BP10-BP13—BP14—55' to 65'
113—9'—200 15'—62 pcs 20' Corrugated
PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO
MONTREAL—BALTIMORE—JACKSONVILLE
RICHMOND—VANCOUVER—NEW ORLEANS
DIESEL LOCOMOTIVE
12 Gen Elec 100, 80, 65, 45 & 25 ton
5—Plymouth 18, 20 & 35 ton
5—AMER. GANTRY WHIRLEY CRANES
5—250—150' Boom—240—130' Boom
1 Clyde 145 100 Steam 25 Ton 100' Boom
R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephone MU-3-3873

PIPE
VALVES and FITTINGS
All Sizes in Stock
NEW—USED
GREENPOINT PIPE SUPPLY CORP.

PROFESSIONAL SERVICES

NEW ENGLAND

Metcalf & Eddy
ENGINEERS
Investigations Reports Design
Supervision of Construction and Operation
Management Valuation Laboratory
1300 Statler Building, Boston 16

MIDDLE ATLANTIC

Edwards and Kelcey
Engineers and Consultants
Highways—Structures
Traffic—Parking
Terminal Facilities
3 William St., Newark 2, New Jersey
Boston Salt Lake City New York

John Clarkeson
Consulting Engineer
Civil Engineers—Consulting Services
Highways, Airports, Bridges
Surveys, Waterfront Facilities
Room 203, Del & Hudson RR Bldg.
Albany, N. Y.

Howard, Needles, Tammen & Bergendoff
Consulting Engineers
Bridges, Structures, Foundations, Express Highways
Administrative Services
1805 Grand Ave., 90 Church St.
Kansas City 8, Mo., New York 7, N.Y.

E. Lionel Pavlo
Consulting Engineer
Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports
642 Fifth Ave. New York 19, N. Y.

King & Gavaris
CONSULTING ENGINEERS
Bridges, Highways, Tunnels
Waterfront Structures, Reports
Investigations, Foundations
Design & Supervision of Construction
425 Lexington Ave. New York 17, N. Y.

Lawrence S. Waterbury
Consulting Engineer
Bowling Green 9-9298
26 Broadway New York 4

D. B. Steinman
Consulting Engineer
BRIDGES
HIGHWAYS
Design, Construction
Strengthening, Investigations, Reports, Advisory Service
117 Liberty St., New York 6, N. Y.

Severud-Elstad-Krueger-Associates
Consulting Engineers
Structural Design - Supervision
Reports - Buildings - Airports
Special Structures
415 Lexington Ave., New York 17, N.Y.

ALWAYS READY
Yes, these consultants are always ready to help you with any problem concerning engineered construction. Call on them with the assurance that you will be receiving the finest of professional advice.

Lockwood, Kessler & Bartlett, Inc.
Engineers *Surveyors*
Civil Engineering Investigations, Reports and Designs, Supervision of Construction, Cadastral, Geodetic, Topographic & Engineering Surveys, Photogrammetric Engineering and Mapping.
One Aerial Way Syosset, N. Y.

Grof & Myers
Consulting Engineers
Highways—Bridges—Airports
Surveys—Reports—Plans
Construction Supervision
1834 North 4th St. Harrisburg, Pa.

Modjeski and Masters
Consulting Engineers
Bridges and other Structures
Foundations
Highway and Expressways
900 North Sixth St. Harrisburg, Pa.
Philadelphia - Miami - New Orleans

Robert W. Lowry, Inc.
Consulting Engineers
Robert W. Lowry M. M. Lepkaluk
Design, Supervision, Reports, Long Span & Movable Bridges, Expressways, Highways, Airports, Prestress Design, Strengthening, Soil Engineering.
227 Pine St., Harrisburg, Pa.
New York-New Orleans-Detroit-Boston

Pennsylvania Drilling Company
Subsurface Explorations, Grouting.
Industrial Water Supply.
Mineral Prospecting.
Large Diameter Drilled Shafts, Reports
1205 Chartiers Ave. Pittsburgh 20, Pa.

Michael Baker, Jr., Inc.
Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.; Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Sprague & Henwood, Inc.
Drilling Services
Foundation Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling.
Main Office
221 W. Olive Street, Scranton, Pa.
Branches:
1009 Western Savings Fund Bldg., Philadelphia, Pa.
11 W. 42nd St., New York, New York
200 Magee Bldg., Pittsburgh, Pa.
575 Linwood Ave., N. E. Atlanta, Ga.
Box 1446—Grand Junction, Colorado
Buchans, Newfoundland

Buchart Engineering Corp.
Consulting Engineers
Highways - Bridges - Sewer Systems
Surveys - Water Works - Dams - Reports
Supervision - Industrial - Municipal Structures
55 S. Richland Ave., York, Pa.
Lancaster, Pa. Washington, D. C.

SOUTH

Dignum and Associates
Consulting Engineers
Civil Electrical
Structural Mechanical
366 Palermo Avenue
Coral Gables 34, Florida

Rader and Associates
Engineers - Architects
Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations, Aerial Photography, Photogrammetry.
111 N.E. 2nd Avenue, Miami 32, Fla.

Mott Core Drilling Company
Core Borings for Buildings, Bridges
Foundation Soil Tests, Highways
Pressure Grouting, Dams, Mine Shafts
Mineral Prospecting
826-846 Eighth Ave. Huntington, W.Va.

MIDDLE WEST

Consoer, Townsend & Associates
Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
360 East Grand Ave., Chicago 11, Ill.

Roy B. Everson
S.E. Consultant Since 1900
For Purification Systems as applied to Sewage Treatment, Water Works and Swimming Pool Circulating Systems. A New System for Automatic Control
211 W. Huron St. Chicago 10, Ill.
Phone SUperior 7-3330

Vogt, Ivers, Seaman & Assoc.
Engineers-Architects
Highways — Structures — Expressways
Industrial Bldgs. — Harbor Facilities
Airports — Dams — Docks
Surveys — Reports
34 W. Sixth St., Cincinnati 2, O.
20 N. Wacker Dr., Chicago 6, Ill.

Toledo Testing Laboratory
Engineers—Chemists
Concrete — Soils — Asphalt
Inspection Research
Tests Development
Foundation Investigation
Borings — Diamond Drilling — Load Tests
Soils Mechanics Laborstory
1810 North 12th St. Toledo 2, Ohio

Photronix, Inc.
offering an integrated process of
AERIAL PHOTOGRAMMETRY AND ELECTRONIC COMPUTATION
For Engineers, By Engineers
790 King Ave. Columbus 12, Ohio

FAR WEST

Woodward-Clyde-Sherard & Assoc.
Consulting Civil Engineers
Soil and Foundation Engineering; Earth Dams; Engineering Geology; Highway and Airport Pavement Design
1150 28th Street, Oakland, California
1340 West Bayaud, Denver, Colorado
310 V.F.W. Bldg., Kansas City, Mo.
4815 Dodge Street, Omaha, Nebraska

INSPECTION & TEST

The Haller Testing Labs., Inc.
140 Cedar St., N. Y. 6, N. Y.
Testing and Inspection of Construction Materials for:
Expressways—Airports
Structures—Bridges
Complete Soils Laboratory
Test Borings—Load Tests
Boston, Plainfield, N. J. New Haven

AERIAL SURVEYS

Aerial Map Service Co.
Topographic, Planimetric, Photo Maps for Highways, Mining, Resources, Construction. City Maps, Tax Maps, Photo Geology, Tellurometer Radio Distance Measurements, Triangulation, Electronic Computation.
1016 Madison Ave., Pittsburgh 12, Pa.

American Air Surveys, Inc.
AERIAL TOPOGRAPHIC MAPS & AERIAL PHOTOS FOR
• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile inventories
907 Penn Ave. Pittsburgh 22, Pa.

Clyde E. Williams & Assoc., Inc.
Aerial Photos - Enlargements
Topographic Maps
At large and particular scales to suit various engineering needs, e. g. Airports, City Sewer & Water, Power & Pipe lines, Reservoirs, Subdivisions, Highways, Bridges & Inventories.
312 W. Colfax Ave. South Bend, Ind.

Professional Assistance
in solving your most difficult problems is offered by consultants whose cards appear in this section.

CONSULT THESE SPECIALISTS . . .

when you need professional assistance in solving difficult problems. Their specialized knowledge and broad experience can prove invaluable in saving both time and money for you.

Engineering News-Record invites other consultants to list the special services they offer on these pages. Rates for the Professional Services section are:

PER WEEK		
13 times	26 times	52 times
¾"—$14.35	$13.35	$12.45
1½"—$23.85	$22.30	$21.00

ADVERTISERS IN THIS ISSUE

Adams & Westlake Co. 72
Allison, Div., GMC 62
Aluminum Company of America 61
American Air Filter Co. 45
American Bitumuls & Asphalt Co. 54
American Bridge Div., U.S.S. ..... 2nd cov
American Hoist & Derrick Co. 118
American Steel & Wire Div., U. S. Steel Corp. 94-95
American Vitrified Products Co. 5
Armco Drainage & Metal Prod., Inc. 43
Atlas Powder Co. 101

Barber Greene Co. 7
Barco Manufacturing Company 87
Bendix Computer Division 70
Bethlehem Steel Co. 110

Caterpillar Tractor Co. 108
Clayton Mfg. Co. 86
Committee on Steel Pipe Research 84
Cummins Engine Co., Inc. 30-31

F. W. Dodge Corp. 58
Dorr-Oliver Company, Inc. 76
Richard Dudgeon, Inc. 72

Filotecnica Salmoiraghi, Inc. 82

Gardner-Denver Company 65
B. F. Goodrich Company, Aviation Products Div. 37
Goodyear Tire and Rubber, Inc. 1
Griffin Wellpoint Corp. 100
Gunite Concrete and Construction Co. 76
W. & L. E. Gurley 44

Haloid Xerox, Inc. 74
Hose McCann Company, Inc. 81

Inland Steel Prod. Co. 11
Insulrock Div., Flintkote Co. 10
International Steel Co. 71
Irving Subway Grating Co. 75

Jackson Vibrators, Inc. 4
Jaeger Machine Co. 82
Jenkins Brothers 16

Keasbey & Mattison Co. 83
Kohler Co. 77

LeRoi Div., Westinghouse Air Brake Co. 55
Link Belt Speeder Corp. 26-27
Lord Electric Company, Inc. 107
Louisville Ladder Company 116
Ludlow Valve Mfg. Co., Inc. 78
Lufkin Rule Company 79

Maginniss Power Tool Co. 106
R. C. Mahon Co. 46-47
Massey-Ferguson, Inc., Indus. Div. 112
Master Builders Co. ..... 3rd cov
Maxon Construction Co. 80
McGraw-Hill Book Co. 131
Mobile Office, Inc. 116
Monroe Calculating Machine Co., Inc. 33
Moretrench Corp. 18
Morris Machine Works 92

Nassau Trailer & Motor Sales 80
National Lead Company 49-50
Naylor Pipe Company 99
Neenah Foundry Co. 106
Newport News Shipbuilding & Drydock Co. 103
Noble Co. 66-67
Northwest Engineering Co. 3

Ozalid Div., General Aniline & Film Corp. . 12

Page Fence Association, Amer. Chain & Cable 64
Phoenix Bridge Corp. 76
Pittsburgh Des Moines Steel Co. 9
Pittsburgh Steel Prod. Co. 88-89
Plan Hold Corporation 86
Republic Steel Corporation 38-39
Ric Wil Co. 68

Sauerman Bros., Inc. 60
Sika Chemical Corp. 85
J. S. Staedtler Co. 90
John W. Stang Corp. 73
Steelcraft Mfg. Co. 97
Superior Lidgerwood-Mundy Corp. 72
Syigab Steel & Wire Corp. 6
Symons Clamp & Mfg. Co. 3

Templeton Kenly & Company 79
Texas Co. ..... 4th cov
Timken Roller Bearing Co. 8

Underpinning & Foundation Co., Inc. 85
Unit Crane and Shovel Corp. 96
United States Pipe & Foundry Co. 104-105
U. S. Rubber Co. 20
U. S. Steel Corp. 13-15, 56-57, 117

Waukesha Motor Co. 51
Weil Pump Co. 109
David White Co. 36
Williams Equip. & Supply Co. 85

Yuba Mfg. Div., Yuba Consol. Ind., Inc. 115

Professional Services 130

CLASSIFIED ADVERTISING
F. J. Eberle, Business Mgr.

Employment Opportunities 125-127
Notices
Proposals 122-125
Equipment
(Used or Surplus)
(For Rent, Sales Wanted) 127
Advertisers Index 126

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABP Member ABC

Number of copies of this issue printed 83,361

D. S. ROBERTSON, Advertising Sales Manager
HUGH J. CARLSON, Assistant Business Manager

ADVERTISING REPRESENTATIVES

Atlanta, 3—Rhodes-Haverty Bldg.,
D. C. Dillon

Chicago, 11—520 No. Michigan Ave.,
L. H. Hunt, W. G. Payne
J. A. Shipley

Cleveland, 13—1164 Illuminating Bldg.,
55 Public Square
F. P. Difore

Dallas, 1—Vaughn Bldg., 1712 Commerce St.,
Robert T. Wood

Denver, 2—1740 Broadway
J. W. Patten

Detroit, 26—Penobscot Bldg.,
D. L. Eaton, R. I. Mann

Los Angeles, 17—1125 W. Sixth St.,
Kent Bourne, S. S. Tisdout

New York, 3—500 5th Ave.,
C. D. Boulan, H. T. Olsen
J. C. White

Philadelphia, 3—Six Penn Center Plaza
D. G. Jensen

Pittsburgh, 22—1111 Oliver Bldg.,
M. Russell

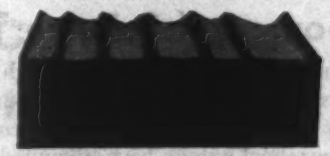
St. Louis, 3—Continental Bldg.,
E. B. Mingle, Jr.

San Francisco, 4—68 Post St.,
J. W. Otterson, R. C. Alcorn

OTHER SALES OFFICES:

Boston, 16—320 Park Square Bldg.,
Great Britain—E. E. Schirmer, McGraw-Hill House, 95 Farringdon St., London, E. C. 4
Europe—Michael R. Zeynel, 13, Landgraf-Wilhelm, Frankfurt/Main, Germany

Save time and money on construction jobs



The reference aid that helps you solve your toughest construction problems

With the construction work that lies ahead for every engineer, it is only up to you to assure yourself of superior workmanship—assure your work of the finest structural qualities—by providing yourself with this revision of the famous Hool and Kinne Library—the books which for years have been providing structural engineers with the facts they need on every problem concerned with the design and construction of civil engineering structures.

HOOL AND KINNE'S

Structural Engineers' Handbook Library

Revised by R. R. ZIPPRODT,

And prepared by a staff of sixty-three well-known engineers, each a specialist in his field.

6 volumes; 3763 pages; 2719 illustrations; 63 contributors

Each one of these six volumes is a complete reference in itself on some aspect of structural engineering. The library

▶**COVERS** the how and why of foundation and substructure design and construction, the general theory of structural members, the detailed design of such members, and the design of their connection with other members.

▶**EXPLAINS** the principles of statics, reactions, moments and shears in beams and trusses, influence lines, methods of computing stresses in lateral trusses and portable bracing.

▶**GIVES** details of design and construction of steel, timber, and concrete structures of all types.

EXAMINE IT FREE!

We invite you to inspect these books for yourself, because we know that that is the one way you can realize their true value to you, and to the jobs that you do. You want to back up your own knowledge with sure, easy-to-get facts, and you want to make your workmanship worthy of your best time and effort. Therefore, the best investment you can make is to add to your own experience the tested working aids given in this dependable reference library.

SAVE $12.00 the difference between the special library price and the cost of the same books bought separately.

EASY TERMS—SEND COUPON

McGraw-Hill Book Co., Inc., Dept. NR-11-13
327 W. 41 St., N. Y. 36

Send me Hool and Kinne's STRUCTURAL ENGINEERS' HANDBOOK LIBRARY, 6 volumes, for 10 days' examination on approval. If the books prove satisfactory, I will remit $7.50 in 10 days, and $6.00 monthly until $43.50 is paid. Otherwise I will return books postpaid.

(PRINT)
Name .....
Address .....
City ..... Zone.... State.....
Company .....
Position .....

For price and terms outside U. S. Write McGraw-Hill Int'l., N. Y. C. NR-11-13

Source of Science Teachers

THE SHORTAGE of competent high school science teachers is being blamed for everything from Russia's lead in launching its Sputniks to juvenile delinquency. But few school systems have attempted to alleviate the shortage by tapping what could be a rich source of teaching talent: retired engineers and scientists.

Good high school science and mathematics teachers are needed to give students a solid foundation in these subjects, to the end that all students will be better equipped to live and work in a scientific age and that particularly promising students will be influenced to seek careers in engineering or science. Many retired engineers and scientists are well qualified to help with this task. They know math and science, and, in addition, can bring to these subjects a vitality born of long experience in their use.

The stumbling block has been that laws in many states stipulate that no one can teach who has not taken a certain number of "education" courses. Realistically, however, in the face of a teacher shortage it would seem that a knowledge of mathematics would be in this case more important than credits in such subjects as child psychology and teaching methods. Required education courses and certification ought not to be insurmountable obstacles if teachers are truly needed.

Brains are our most valuable resource, but they're a resource that can't be stored, must be used. ENR readers could usefully take the initiative in their communities to bring out of storage some of the brains needed to fill the gap in math and science teaching. True educators, if not the overly orthodox educationalists, should be sympathetic to such a proposal.

The U.S. at Its Best

BEFORE IT BECOMES HISTORY the recent International Congress on Large Dams—with technical meetings in New York and study tours to three different parts of the country—should be accorded the high praise it deserves as a singularly successful purveyor of international good will.

Special praise should go to those consulting engineers, contractors, materials and equipment manufacturers, private utility companies and individuals who contributed, in that order, to financing the Congress. The $75,000 they contributed paid the rent for the meeting rooms, covered the cost of simultaneous translation facilities, provided for the publication of a souvenir book on U.S. dams, subsidized part of the cost of the more expensive banquets and in general made the meeting a memorable occasion both technically and socially.

The fact that the construction industry itself, and not the government, planned and financed the Congress was impressive evidence to our foreign visitors—over 400 of them from 45 different countries—that we are indeed a nation dedicated to private enterprise. Members of the U.S. committee had been disappointed in their early planning—and with rather good reason—when the federal government, which has funds to aid international scientific meetings, turned down a request for a contribution to cover the cost of simultaneous translation facilities on the surprising ground that the Congress was not scientific enough. But the rebuff was taken in stride, and the construction industry has reason to be proud of the results.

The Congress, in all its aspects, showed off the United States at its best. The efficiency of the technical sessions, involving discussions of the nearly 150 scientific papers written for the Congress, was notable. The interchange of views on dam design and construction was helpful to the art in every country represented. And, finally, the study tours, on which the foreign visitors not only saw dams, but people and the American way of life, received universally enthusiastic praise.

In the end, our foreign visitors went home knowing our country as it really it—friendly, dedicated to its goal of a higher standard of living for all through engineering and construction both at home and abroad.

Distinguished in its scientific aspects, the Congress was equally notable for advancing the cause of international goodwill. It set a pattern to be remembered.

To Keep Ahead

THE IMPORTANCE OF BASIC RESEARCH has not been widely enough appreciated by the construction industry. Generally content to use the best information at hand, our industry too often has left to others the vitally important task of searching for new scientific knowledge. Its products are built conservatively—to last. Engineers who conceive and bring forth constructed products are appliers more than developers of basic principles.

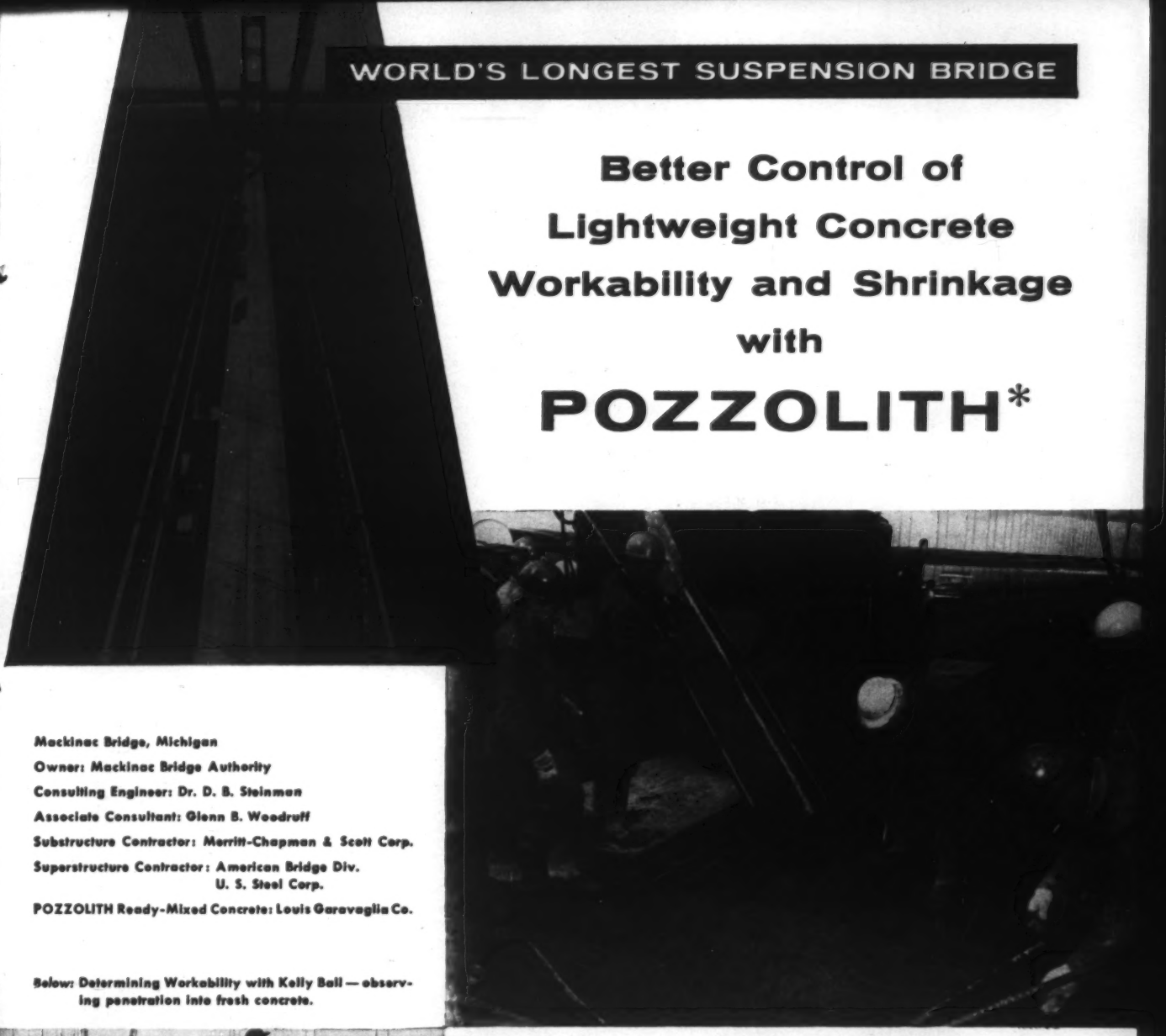
There is on the other hand, no dearth of applied research. Materials, structural shapes, hydraulic designs, pavements, equipment—all sorts of things are tested by our industry for their practical applications. And, of course, a large share of this applied research is done for the industry by manufacturers of the materials and equipment of construction.

It is encouraging now to see how many more associations, companies and foundations in construction are becoming research-conscious. It is to be hoped that more of them will see fit to invest in the quest for new knowledge, rather than in applied research aimed at development of some specific material or machine.

The technology of construction—its science, its engineering—has expanded immensely, but it must continue to expand. The construction industry must put more good men out on the fringes of that technology, doing research that can open whole new areas of knowledge.

WORLD'S LONGEST SUSPENSION BRIDGE

Better Control of Lightweight Concrete Workability and Shrinkage with POZZOLITH*



Mackinac Bridge, Michigan

Owner: Mackinac Bridge Authority

Consulting Engineer: Dr. D. B. Steinman

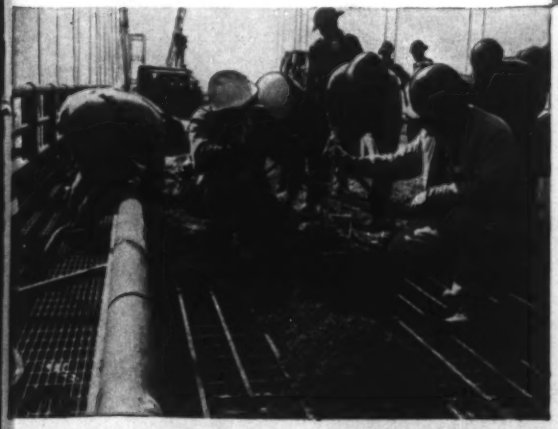
Associate Consultant: Glenn B. Woodruff

Substructure Contractor: Merritt-Chapman & Scott Corp.

Superstructure Contractor: American Bridge Div. U. S. Steel Corp.

POZZOLITH Ready-Mixed Concrete: Louis Garavaglia Co.

Below: Determining Workability with Kelly Ball — observing penetration into fresh concrete.



Workable, lightweight concrete, with 2½"-3" slump...

Good cohesiveness and reduced shrinkage...

Strength: 4250 psi average at 28 days—3000 psi specified...

...these are several of the benefits obtained with POZZOLITH in the lightweight concrete filled floor sections of this $100-million structure.

One of our fieldmen will be glad to demonstrate—at your desk or on the job—the important advantages of POZZOLITH for your projects.

***POZZOLITH — Master Builders trademark for its time-tested water-reducing, air-entraining admixture for concrete.**

THE MASTER BUILDERS CO.
DIVISION OF AMERICAN-MARIETTA CO.

General Offices: Cleveland 3, Ohio • Toronto 9, Ontario • *Export:* New York 17, N. Y.

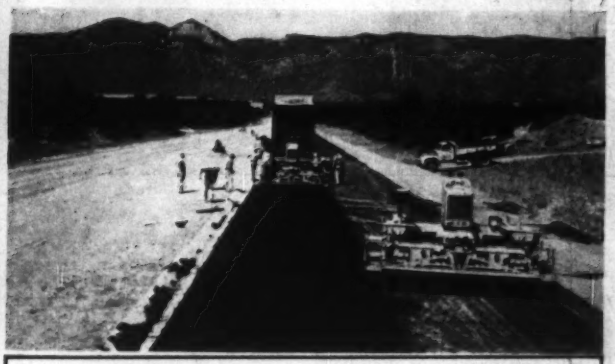
Branch Offices In All Principal Cities • *Cable: Mastmethod, N. Y.*

(Photos by Stewart's for Exchange National Bank)

View of Air Force Academy from a helicopter. Main buildings of Academy in background, at foot of Rampart Range of the Rockies.

U.S. Air Force Academy

COLORADO SPRINGS, COLO.



Its network of roads is paved with durable Texaco Asphaltic Concrete

CONTRACTOR - Peter Kiewit Sons' Company, Denver, Colo.

Although it is interested primarily in air transport, our new Air Force Academy could not function efficiently without its network of more than 50 miles of 4-lane and 2-lane roads.

The wearing surface, base and subbase constructed on these roads provide a pavement which is flexible from top to bottom. It consists of a 6-inch gravel subbase, covered by a 4-inch crushed stone base. After the base is primed with a medium-curing Texaco Cutback Asphalt, it is topped by a wearing surface of resilient, rugged Texaco Asphaltic Concrete 2 to 2½ inches thick.

Thanks to the flexible character of this type of pavement, it maintains complete contact with the supporting subsoil at all times. This is why flexible paving is able to withstand heavy traffic longer than rigid paving and at a lower upkeep cost.

Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils offer the road builder a wide choice of pavement types. These range from heavy-duty paving for Interstate Highways to inexpensive asphalt surface-treatments for suburban residential streets. Helpful information on all types of asphalt construction for roads, streets, airports and parking areas is supplied in two free booklets. Write our nearest office for copies.

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York 17

Boston 16 (20 Providence St.) • Chicago 4 (332 So. Michigan Ave.) • Houston 1 (720 San Jacinto St.)
Jacksonville 1 (P.O. Box 749) • Denver 1 (P.O. Box 2100) • Philadelphia 2 (1411 Walnut St.)
Richmond 11 Va. (P.O. Box 1379) • Minneapolis 3 (Groveland Ave.-Clifton Pl.)

TEXACO

TEXACO ASPHALT